TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

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LEPROSY.

JEANSELME (E.). **Note sur la fréquence de la lèpre parmi les recrues coloniales.**—*Bull. Soc. Path. Exot.* 1916. Nov. Vol. 9. No. 9. pp. 685–687.

Since the beginning of the war, M. Jeanselme has had occasion to invalid out of the army three leprous soldiers with obvious symptoms, who had passed before several medical commissions without the nature of the disease being suspected. The condition in two of them had been diagnosed as "tuberculo-ulcerous syphilides" and in the third as polyneuritis.

These errors of diagnosis seem to be not rare. Another case of well developed leprosy with a leonine face had been many months in the campaign before the disease was recognised. If these well marked cases are overlooked, it is probable that many with commencing or slight lesions are also missed.

In every case of a native or of a white man who has lived in the colonies who presents cutaneous nodules, or erythematous or pigmented spots of uncertain nature, search should be made for changes of sensation in the area and neighbourhood of the lesions, anaesthesia, thermo-analgesia or muscular atrophies, especially of the interosseous muscles of the hands, thenar and hypothenar eminences, diminution of power of muscular contraction, thickenings of the ulnar nerve, and the presence of acid-fast bacilli in nasal scrapings and in the nodules. M. Jeanselme describes methods for carrying out these investigations.

P. S. Abraham.

REMLINGER (P.). **Note sur l'état de la lèpre au Maroc.**—*Bull. Soc. Path. Exot.* 1916. Oct. Vol. 9. No. 8. pp. 563–567.

According to the author leprosy is probably as prevalent in Morocco as it is in Algeria. There is a "leproserie" at Marrakech with 20 to 30 lepers and a well known endemic centre of the disease at Haouz. It is also endemic in the valley of Oued Souss, and among certain tribes near Mogador. The lepers who have come to consult Dr. CAMPREDON at Mogador have all been affected with nodular or mixed leprosy, have been males and with one exception have been Berber Mussulmans. At Doukkala in the hinterland of Mazagan, a village of

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lepers existed until 1893, when they were dispersed by the Sultan. Several cases of leprosy have been observed in other parts of the country, and since 1911 the author has met with five cases at Tangiers, three men and two women, probably imported cases, one Portuguese born in Andalusia, and four Israelites who had been in Brazil.

It is impossible to give an estimate of the number of cases in the whole country, much of which is unexplored by medical men. Special points to be noticed are, that the disease exists equally on the coasts as in the interior, that it is practically confined to the Mussulman, and the rarity of evidence of contagion in spite of the absence of hygienic or other precautions. At present severe measures of prophylaxis do not seem to be necessary.

P. S. A.

THÉZÉ (J.). **Pathologie de la Guyane française. (Lèpre, Filariose, etc.). Rapport sur les Travaux de l'Institut d'Hygiène et de Bactériologie 1914-1915.**—*Bull. Soc. Path. Exot.* 1916. July. Vol. 9. No. 7. pp. 449–469. [V. La Lèpre. pp. 449–464.]

In 1685 an attempt was made by edict ("Code noir") to prevent leprous slaves from entering Guiana; the author believes that if this had been effectively carried out the colony would have been free from the disease, which according to ULLOA (Brazil) and PINSON (Peru) did not exist in the New World until the introduction of the African slaves. Leprosy spread in the Colony, and in 1777 a "leproserie" was established at l'Ilet la Mère, and owners were ordered to notify their leprous slaves. In 1802, 30 lepers were in isolation in the island. The law was then in abeyance during the Portuguese occupation until 1817 when the French resumed possession of the colony. From that time many laws were passed in reference to the lepers, and in 1848 the isolation law was reinacted; but in place of the obligatory declaration on the part of slave owners, medical men (not specialists) were required to search for the lepers who were brought before a Board. Various modifications of the statute then took place, but with little or no success, up to 1891 and 1892. According to these later laws, all lepers who wish to go and all who have no means of caring for themselves, vagrants, beggars, etc., are sent to the leper settlement of Acarouany, while others of easy circumstances may remain at home under proper hygienic conditions not nearer than 2 kilometers from Cayenne, or 1 kilometer from other towns.

The relaxation of the laws has not resulted in diminishing the disease. To estimate the actual number of lepers in the colony is very difficult. Various figures have been given, some quite fantastic. The last Government enumeration (1915) gave a total of 81, but this number is obviously under the mark. The author estimates the number in Cayenne alone at approximately 83, and he believes that there must be about 300 in the whole colony, without counting those at present in the leper settlements.

The great proportion of macular cases, *i.e.*, of early leprosy, is in the author's opinion, a proof that the disease is on the increase, and he considers that the young lepers constitute a great menace for the future. Most of these cases are children, who do not come under notice or under treatment, or are hidden until the symptoms become very

obvious, *e.g.*, on the face (" mal rouge de Cayenne"). The public belief is that the disease is " in the blood," or hereditary. Nearly all the cases are of the poorer classes. The aboriginal Indians alone seem to be immune from the disease.

There are now two leproseries, one for the civil population at Acarouany, the other for prisoners at the Isle of St. Louis. The former is on the borders of a creek 35 kilometers by river from Mana, isolated and difficult to get at, most miserable and insanitary in every way, and generally condemned. Only outcast or abandoned lepers are sent there; in 1914 they numbered 42. The penal lepers at the Isle of St. Louis are better off; they are generally about 60 in number.

At present the prophylactic measures against leprosy in Guiana are deficient. The author discusses the difficulties of carrying them out and recommends a systematic expert examination of every child for spots, particularly on the buttocks, back and thighs—the most frequent sites—in order to discover the early cases and to keep them under medical supervision. He does not believe in the possibility of efficacious home isolation in the class affected in Guiana but, believing in the contagiousness of the disease, he recommends collective internment, preferably in regional leproseries where the patients could be isolated not far from their friends, and be in happier circumstances than in one large establishment.

P. S. A.

RIVAS (D.). **The Bilateral Distribution of the Lesions in Leprosy in Relation to the Bacteremic Nature of the Disease.**—*New Orleans Med. & Surg. Jl.* 1916. Sept. Vol. 69. No. 3. pp. 215–218.

The author refers to his previous observations demonstrating the presence of the *Bacillus leprae* and of *lepra cells* in the circulating blood of lepers as a constant rather than accidental occurrence [see this *Bulletin*, Vol. 5, p. 329], and he considers that the " bacteremic " nature of the disease is further proved by the remarkable bilateral symmetry of the lesions in leprosy. He discusses the terms " bacteremia " and " bacteremic disease " and defines the latter to be a disease or affection " in which the pathogenic bacterium, the cause of the infection, lives, grows and multiplies in the circulating blood of the patient during the course of the disease." All cases of bacteremic infections, when accompanied with skin eruptions, have these eruptions bilaterally distributed or generalised, the virus living in the circulating blood being distributed more or less equally throughout the body. He considers that this is clearly demonstrated in leprosy.

P. S. A.

HONEIJ (James A.). **Bone Changes in Leprosy. (An Abstract).**—*New Orleans Med. & Surg. Jl.* 1916. Sept. Vol. 69. No. 3. pp. 219–222. With 4 text figs.

The earliest changes observed by the author have been either thinning of the epiphyses, especially the distal ends, or a decrease in circumference of the distal phalanges of the little finger. The changes may

range from early atrophy to total absorption, inflammatory action, distortion or fracture. It appears that the thumb bones are rarely affected. In the nerve type of leprosy atrophic changes may be expected, and in the nodular cases inflammatory or hypertrophic changes. As a matter of fact, this may be reversed, and both kinds of change may be observed in the one form.

The author suggests that the bone changes in leprosy are due to factors of metabolism rather than to the direct action of the bacilli.

The paper is illustrated by a number of skiagrams.

P. S. A.

AIYAR (T. A. R.). **The Etiology of Leprosy.**—*Brit. Med. Jl.* 1916. Dec. 16. p. 837.

This note adds little or nothing to our knowledge. The writer is well acquainted with 12 instances in his practice, and he maintains that there was ample evidence to prove that the malady was not contagious. They were not isolated and no members of their families had been infected in 20 years. He thinks that there is " evidence to show that a leprotic father can transmit the disease to the offspring without infecting the mother " and admits that how leprosy actually spreads needs further investigation.

P. S. A.

ROSENTHAL (Melvin S.). **Lepra mutilans.**—*Jl. Amer. Med. Assoc.* 1916. Oct. 28. Vol. 67. No. 18. pp. 1292–1293. With 3 text-figs.

This is an interesting account of a coloured bootblack, aged 22, born in Demerara and living in Barbados from 1897 to 1907, in which year he came to New York and worked as a labourer. In 1908 he noticed contraction of the fingers with anaesthesia and with subsequent loss and deformity of fingers and toes, and development of thickenings, nodules and ulcerations on the face, ears, etc. On presenting himself at the Mercy Hospital in April 1916, he was obviously a well-marked case of advanced mixed leprosy, the diagnosis of which had been hitherto overlooked. As the author remarks : " It is difficult to conceive that a man with so pronounced and evidently serious a skin disease should have entirely escaped a diagnosis in spite of the fact that within a year he had been treated both as an ambulatory and a bed case in several hospitals." In the author's opinion " this case well illustrates the urgent need of a national leprosarium where these unfortunates can find a permanent refuge, and the community be spared the presence of an unsightly, mutilated and incurable human being awaiting the final call."

P. S. A.

LANE (John E.). **A Case of Leprosy in Connecticut.**—*New York Med. Jl.* 1916. Dec. 23. Vol. 104. No. 26. Whole No. 1986. p. 1244.

As far as the author knows, only one other case of leprosy has been seen in Connecticut in recent years. The case was a Greek from Thessaly, aged 20, who came to New York in 1912 with the charac-

teristic lesions of well developed nodular leprosy. The Wassermann reaction was positive, and the bacilli were readily demonstrated in smears of nasal mucus and in a nodule.

The chief interest in the case lies in the fact that the patient had been wandering about for a long time in New York, Pennsylvania and Virginia without his disease being recognised.

P. S. A.

ARROWSMITH (H.). **A Case of Tubercular Leprosy involving the Upper Air Passages.**—*Laryngoscope.* 1916. Mar. Vol. 26. No. 3. pp. 188–189.

The patient was a girl of 15 with extensive nodular and pigmented lesions on the face, ears, trunk and limbs and numerous nodules on the mucous membrane of the mouth and nasopharynx; the epiglottis and arytenoids were largely infiltrated, but the larynx itself apparently free. According to the history there was no disease till three years before admission; its course must have been very rapid. Notwithstanding the extent of the growths, the patient complained of but little discomfort beyond some nasal obstruction and dryness of the throat.

We are not told her nationality, or whether she had been living in a leprosy district. Her brother came recently from Florida, with a macule on the leg which was considered to be leprosy.

P. S. A.

ROGERS (Leonard). i. **Preliminary Note on the Intravenous Injection of Gynocardate of Soda in Leprosy. With Further Experience of its Subcutaneous Use.**—*Brit. Med. Jl.* 1916. Oct. 21. pp. 550–552.
ii. **Gynocardate of Soda intravenously in Leprosy.** [Correspondence].—*Indian Med. Gaz.* 1916. Nov. Vol. 51. No. 11. p. 437.

i. The author has recently recorded his encouraging results by subcutaneous injections of gynocardates in leprosy [see this *Bulletin*, Vol. 8, p. 245]. In this paper he describes his investigations carried out with the help of Dr. SUDHAMOY GHOSE on the fatty acids contained in chaulmoogra oil. Those with a low melting point constitute the so-called "Gynocardic acid" and he finds that their soluble soda salts can be safely given intravenously, being far less toxic than other preparations of chaulmoogra oil. They are obtained either from cold drawn chaulmoogra oil or from the buttery substance obtained by further compression of the seed of *Taraktogenos kurzii* with the aid of steam heat. He has been giving them intravenously in some 20 cases of well marked leprosy for six weeks with results which "show the intravenous route to present important advantages over the subcutaneous one"; the method is painless and more efficient. A two to three per cent. sterilised solution is employed, from $\frac{1}{10}$ to $\frac{4}{5}$ of a grain being given in each dose. "The more striking result is the occurrence of definite local reactions in the diseased tissues sometimes accompanied by fever, which has been seen in several cases after two to three-fifths of a grain have been given intravenously."

We shall await with interest a further report of the cases treated, as Sir Leonard says that the results so far are "decidedly encouraging."

ii. Sir Leonard Rogers reports that further researches have resulted in the use of a pure form of sodium gynocardate which can be safely injected intravenously. In several cases it has been followed by reaction, rise of temperature with swelling of thickened tissues, discharge of broken down bacilli and subsequent improvement. This method is far less painful than by the subcutaneous injection of the drug. Sterile ampoules containing the dose for intravenous use are now prepared by Messrs. Smith, Stanistreet & Co.

Sir Leonard repeats here that he makes no claim to cure leprosy, but that he has seen sufficient improvement in a number of cases to justify his recommending a careful trial of this treatment by others.

P. S. A.

HOPKINS (Ralph). **Observations on the Treatment of Leprosy with Special Reference to Chaulmoogra Oil.**—*New Orleans Med. & Surg. Jl.* 1916. Sept. Vol. 69. No. 3. pp. 223–232.

This is an important contribution to the subject. The author compares the results with chaulmoogra oil with other methods of treatment in 269 cases extending over a period of 15 years, since he has been visiting physician of the Lepers' Home of Louisiana. He makes due allowance for the improvement generally observed soon after admission to the Home, due to the better hygienic conditions, good nursing, etc., irrespective of treatment, as well as to the spontaneous disappearance of some lesions often observed and the occasional good effect of intercurrent diseases like erysipelas.

So strong has the conviction become that chaulmoogra oil is beneficial, that it is the routine practice to administer it to every case on admission to the Home. The disadvantages of its internal administration are the slowness of its action and the nausea often caused. Cases not too advanced and able systematically to take sufficient doses show a large percentage of improvement. In 14 cases the improvement has progressed to a point of complete disappearance of all lesions and bacillary evidence. The average time of cure was about three years.

Since 1913 the oil has been given hypodermically in nine cases according to MERCADO's formula with camphorated oil and resorcin, and recently VAHRAM's emulsion of chaulmoogra oil has been given intravenously in two cases with, so far, good results.

Of all other remedial agents the one that has best stood the test of time is Fowler's solution in diminishing the duration and severity of the lepra fever.

P. S. A.

TAKANO (R.). **The Treatment of Leprosy with Cyanocuprol.**—*Jl. Experim. Med.* 1916. Aug. Vol. 24. No. 2. pp. 207–211.

The author briefly reports his experiments with cyanocuprol in six cases of leprosy—four maculo-anaesthetic, and two mixed cases, the drug having proved of value particularly in the treatment of tuberculosis in animals. Contrary to the experience in tuberculous patients, no local or general reactions were caused. Twenty to twenty-four

mgm. may be given weekly, by intravenous injections. Unless the injections be given very slowly and the patient be lying down, anaphylactoid symptoms may result after the fifth or a later dose.

In all these cases diminution of the lesions soon set in, macules fading, sensation returning, and nodules absorbing.

In only one case, which was complicated with pulmonary tuberculosis, the temperature rose and there was some dyspnoea.

The treatment, so far apparently beneficial, is being tried in a number of other cases.

P. S. A.

PELLAGRA.

GOLDBERGER (Joseph). **The Transmissibility of Pellagra. Experimental Attempts at Transmission to the Human Subject.**—*Public Health Rep.* 1916. Nov. 17. Vol. 31. No. 46. pp. 3159–3173.

A very important communication in which an attempt to settle the vexed question of the communicability of pellagra is described. There is a widely held belief, especially in the United States, that pellagra is a transmissible disease, but on examination the evidence in favour of this view fails to support this assumption and in many cases is susceptible of an entirely different interpretation. One investigation carried out by HARRIS (1913) who claimed to have successfully inoculated a monkey with a filtrate from pellagrous lesions, seemed to furnish direct evidence that the disease was communicable. Later observations, however, including those of HARRIS himself, failed to confirm this result and the question still remained an open one.

In order to throw further, and if possible, conclusive light on the subject, the author tested the infectivity of pellagra by experiments on an animal species highly susceptible to the disease, namely, man himself.

The experiments were carried out on 16 persons, one of whom was a woman. They varied in age from 26 to 42 years. No restraint of any sort was imposed; they were advised to continue their customary habits of life and diet and were permitted to travel freely in pursuit of their ordinary occupations. No attempt was made to avoid contact with known cases of pellagra. Several of the volunteers were medical men who by reason of their official duties came into intimate contact with pellagra in its natural environment.

The materials used in the experiment were obtained from 17 pellagrins and consisted of blood, naso-pharyngeal secretions, epidermal scales from pellagrous skin lesions, urine and faeces.

Scales, urine and faeces were administered by mouth; the blood was administered by intramuscular or subcutaneous injection and the secretions by application to the mucosa of the nose and nasal pharynx. Certain variations were also indulged in. In order to reduce gastric acidity and thus minimise any possible germicidal action of the gastric juice, the ingestion of material was preceded by a dose of sodium bicarbonate. The products were always taken on an otherwise empty stomach. The faeces, urine and scales were often administered together in the form of a pill made up with flour or bread crumbs.

The results strongly support the view that pellagra is not infective for, in spite of the drastic if somewhat repulsive procedures indicated, no symptoms of pellagra resulted in any case. A certain number of the subjects of the experiment were troubled with some flatulence and diarrhoea for short periods due probably to the ingestion of such large amounts of filth, but no untoward symptoms appeared during the four and a half to six and a half months that the subjects were under observation

H. Maclean.

SILER (J. F.), GARRISON (P. E.) & MACNEAL (W. J.). **The Subsequent History of Pellagrins in Spartanburg County, S.C., who survived the Initial Attack.**—*Arch. Intern. Med.* 1916. Sept. 15. Vol. 18. No. 3. pp. 340–375. With 9 text-figs.

In a preceding paper of this series, the initial attacks of pellagra in 1,180 cases occurring in Spartanburg County were discussed in regard to race, sex and age. The death-rate for these cases in the year of initial attack was 15·8 per cent. In the present rather lengthy paper the fate of the survivors of the initial attack of this same series is considered, particularly in regard to their freedom from recurrences, the appearance of these recurrences, the death-rate of recurrent attacks and the relation of these phenomena to the duration of the disease. The following conclusions were arrived at :—

" 1. The total number of recorded recurrent attacks of pellagra in this series of patients was 1,053, with 130 deaths in the year of recurrence. The death rate in recurrence was therefore 12·3 per cent.

" 2. The total number of instances of freedom from recurrent attack of pellagra during a year numbered 617. The ratio of nonrecurrence to recurrence was therefore 617 to 1,053, or approximately 4 to 7.

" 3. For pellagrins in the later years of the disease the prognosis is more favourable for recovery from the present attack but apparently less favourable in respect to escape from recurrence in the next subsequent year. In other words, after successive annual attacks the disease seems to become more firmly established as a chronic disease with annual manifestations, but also becomes less acutely malignant.

" 4. A year without recurrence is a very favourable omen. Subsequent recurrence is less likely to appear and if it does appear it is less likely to end in death.

" 5. Recurrence after several years of freedom from the disease is not uncommon and a considerable proportion of these recurrences end fatally.

" 6. It is impossible to say when a patient has definitely recovered from the disease pellagra. It seems to us very much more advisable to speak of recovery from the particular attack of the disease in a given year. In those patients who escape recurrence for one or more years it is best to consider the disease as arrested or as inactive, much as we do in tuberculosis or in syphilis."

H. M.

SILER (J. F.), GARRISON (P. E.) & MACNEAL (W. J.). **The Relation of Recurrent Attacks of Pellagra to Race, Sex and Age of the Patient and to Treatment of the Disease.**—*Arch. Intern. Med.* 1916. Nov. 15. Vol. 18. No. 5. pp. 652–691. With 10 text-figs.

A study of the correlation between recurrence of pellagra or escape from recurrence on the one hand, and race, sex and age on the other hand. This study was undertaken with the hope that the results might contribute to the elucidation of the problem of prognosis in pellagra. The results obtained are summarised as follows :—

" 1. The tendency to recurrence was approximately equal in the two sexes and in the two races considered, the percentage of years with recurrence being 62·4 for white females, 63·1 for white males, 69·4 for negro females and 64.3 for negro males.

" 2. The death-rate in recurrent attacks was 12·3 per cent. for the whole group of pellagrins considered, being considerably below the death-rate in initial attack of pellagra for the same group, which was 16·2 per cent.

" 3. The death-rate in recurrent attacks was 9·4 per cent. for white females, 14·9 for white males, 27·9 for negro females and 44·4 for negro males, the variation corresponding roughly to the difference in mortality observed in initial attacks in these groups.

"4. White girls who had their initial attack of pellagra before the age of 10 showed a recurrence rate of 46·7 per cent. Those with onset in the second decade of life had a recurrence rate of 67 per cent. and the women with onset at from 20 to 50 years suffered recurrence in 63·5 per cent. of the years for which there are recorded observations. The recurrence rates for the white males with onset in the same age periods were 44, 31·6 and 71·1 per cent, respectively.

"5. Recovery from pellagra is much more frequent and more permanent in children than in adults.

"6. Recurrence of pellagra after one or more years of freedom from attacks is not uncommon. This phenomenon is especially noticeable in white females of child-bearing age.

"7. As compared with initial attacks, recurrences of pellagra are relatively less common in white children because of their tendency to recover and in the colored race because of their high death-rate in year of initial attack. Recurrent attacks are relatively more numerous in white men over 44.

"8. There is a definite indication of increased resistance to recurrence at about the age of puberty in both sexes of the white race. This resistance is very evanescent in females but continues into the third decade of life in males.

"9. The hygienic-dietetic treatment has given good results as far as recovery from the acute attack is concerned. Subsequent recurrence has been observed in a large majority of such cases.

"10. Pellagrins who have recovered from very severe attacks seem less liable to recurrence in subsequent years.

"11. General measures to increase the resistance of the patient should be continued for at least a year after recovery from the acute attack. Physiologic rest, diet and tonic drugs, as well as strict personal hygiene, should be employed.

"12. The successful treatment of complicating disorders is very important in the successful management of pellagra."

H. M.

SILER (J. F.), GARRISON (P. E.) & MACNEAL (W. J.). **An Experimental Test of the Relation of Sewage Disposal to the Spread of Pellagra.** —*Proc. Soc. Experim. Biol. & Med.* 1916. Vol. 14. No. 2. p. 28.

The community of Spartan Mills in the city of Spartanburg S.C. constituted an endemic centre for pellagra. Surface privies here were replaced by a water carriage system of sewage disposal in the latter part of 1913 and the beginning of 1914. This measure was followed by a great reduction of the disease so that in the pellagra season of 1916 only one new case appeared among the 2,000 residents on the Mill property. Many of those, however, who were pellagrins had recurrences in 1916. The improvement in sanitation seemed to prevent the non-pellagrous part of the population from contracting the disease, but not to affect the course of the disease in those already suffering.

H. M.

SHAW (Thad). **Pellagra: Its Causation and Alleviation.**—*Amer. Med.* 1916. Nov. Vol. 11. New Ser. No. 11. pp. 779–782.

The author believes that the etiology of pellagra is to be found in nutritional deficiency, though adverse circumstances such as poverty and bad hygienic conditions play a part. In this connection, it is pointed out that when poverty was rife in France in the reign of Napoleon I. pellagra flourished; later, when France became prosperous, the disease gradually disappeared and is now very rare. The possibility of an increase in the incidence of pellagra due to the economic

pressure caused by the war is referred to. The author favours GOLDBERGER'S* view as to the etiology of pellagra and rejects the parasitic and infective theories. Treatment on the usual lines with plenty of fresh meat is recommended.

H. M.

RICE (H. W.). **The Etiology of Pellagra in Children—A Study of Two Hundred Cases in Orphanages.**—*Southern Med. Jl.* 1916. Sept. Vol. 9. No. 9. pp. 778–785.

A consideration of certain data obtained in an epidemiological study of 200 pellagrous children in orphanages. The investigation furnished no evidence that corn played any part in the etiology of the disease. Some apparent relation between the amount of animal food consumed and the spread of pellagra was obtained; on the whole the cases appeared to be less numerous in institutions where plenty of fresh meat was given.

The incidence of pellagra was much higher in children under 12 years of age, but this could not be accounted for by difference of diet. The liability to develop the disease was found to be three times greater during the first year in an orphanage than during any subsequent year. Unsatisfactory hygienic conditions, insects, etc., appeared to play no part in the etiology of the disease though the usual predisposing causes such as age, sex, hereditary weakness, poor nutrition and coincident diseases were obviously operative.

H. M.

YARBROUGH (J. F.). **Pellagra: Its Etiology and Treatment.**—*Med. Record.* 1916. Sept. 2. Vol. 90. No. 10. pp. 416–418.

In a former paper [see this *Bulletin,* Vol. 8, p. 343] the author expressed the view that pellagra was an auto-intoxication caused by a diet too rich in carbohydrate. This carbohydrate was converted in the stomach into what distillers call "sour mash," and the products of this abnormal process were absorbed into the blood stream, giving rise to the symptoms of pellagra. As a result the blood of the pellagrin became acid. To counteract this acid intoxication, an exclusive protein diet was recommended; this was combined with fairly large doses of dilute nitric acid, a remedy recommended by DEEKS in 1913.

In the present paper an attempt is made to substantiate these claims by introducing clinical data which, in the author's opinion, supports them. Emphasis is laid on the statement that the cure of pellagra can never be accomplished by dietetic measures alone, but the necessary strictly protein diet must be accompanied by medicinal treatment in the form of nitric acid. A partial explanation of the rationale of the suggested treatment is given, in which the statement is made that in pellagra the blood becomes "acid" and that this acidity is counteracted by the ingestion of nitric acid.

[It is difficult to understand, as the author admits, how a product such as nitric acid can render the blood alkaline, but as the question is being investigated by "one of America's foremost biological chemists," the results will be awaited with some interest. The author furnishes no evidence whatever in support of his statement that the blood in

* See this *Bulletin,* Vol. 7, pp. 51, 52, 309; Vol. 8, p. 339.

pellagra becomes "acid," nor does he define with any accuracy what he means by acid blood. In the light of recent work carried out on other diseases it is certain that pellagra blood does not become acid in the true and modern sense of the word, though its potential alkalinity may be, and probably is reduced. In sudden transmission from a mixed diet to a strictly carbohydrate-free protein regime, there is generally a temporary increase of organic acids in the blood of even healthy individuals and no doubt this condition must have existed in the author's patients. The general clinical history of pellagra does not indicate that the disease itself produces acidosis and coma, as might be expected if the author's hypothesis were correct. The three cases brought forward in support of the nitric acid treatment are interesting but not convincing, since the number is too small. If nitric acid has any specific action in pellagra (and of this there is no real evidence) it probably acts in some other manner than that propounded by the author (see also CONNOR, this number, p. 227).]

H. M.

PERDUE (J. D.). **Pellagra: A Brief Resume of Known Facts.**—*Amer. Med.* 1916. Nov. Vol. 11. New Ser. No. 11. pp. 777–779.

This paper describes, in a brief and comprehensive manner, the symptoms and treatment of pellagra. Attention is drawn to the fact that pellagrins in many cases emit a very characteristic odour, probably caused by saprophytic bacteria; this odour may sometimes be of value in diagnosis. In the treatment of the disease, a liberal diet consisting largely of protein but containing some carbohydrate is advocated, together with medicinal remedies which include nitric acid, copper arsenite, sodium cacodylate and other drugs.

[It is interesting to note that the auther uses nitric acid in treatment as recommended by YARBROUGH (see above), but contrary to the instructions of the latter allows a certain amount of carbohydrate. No results of the treatment are furnished.]

H. M.

SMITH (W. Atmar), POLLITZER (R. M.) & MUSTARD (Harry S.). **Pellagra in Charleston, S.C.**—*Southern Med. Jl.* 1916. Sept. Vol. 9. No. 9. pp. 786–790.

From a careful study of pellagra as it occurs in Charleston, S.C., the authors believe that this town constitutes an endemic focus in which sporadic cases have occurred for many years; the disease is steadily on the increase. The mortality is much higher in the negro than in the white, and in females than in males. Bad hygienic and overcrowded conditions play some part in the disease.

H. M.

JELKS (John L.). **Some Interesting Features concerning the Study of Pellagra.** — *Pacific Med. Jl.* 1916. June. Vol. 59. No. 6. pp. 353–358.

The author appeals to investigators to cast away all preconceived ideas as to the etiology of pellagra and to continue their researches with unbiassed minds. This excellent advice, however, is followed by certain dogmatic statements that pellagra is an infectious, bacterial

disease, the symptoms of which are due to toxic products of bacterial origin. It is suggested that amoeba may in some cases be the precursor "paving the way by breaking the continuity of the gut or may indeed be the host." At any rate, the author is quite certain that pellagra has nothing whatever to do with diet or deficiency of any substance necessary for life.

[The author's view that pellagra is infectious is entirely opposed to the recent results of GOLDBERGER [this number, p. 222).]

H. M.

CONNOR (Ronald C.). **A Review of Pellagra Cases admitted to Ancon Hospital and Discussion regarding Etiology and Treatment of Pellagra.**—*Proc. Med. Assoc. Isthmian Canal Zone.* Apr. to Dec. 1915. Vol. 8. Pts. 1 & 2. pp. 155–163.

An account of cases of pellagra, occurring in the Panama Canal Zone, which were admitted to Ancon Hospital between 1909 and 1915 inclusive. Pellagra was first diagnosed in this region in 1909 and since that time its incidence has steadily increased, although the hospital records mentioned show no definite rise in the number of cases. Of the 76 cases of pellagra admitted during the above period the number per year was as follows :—

1909	1
1910	0
1911	12
1912	14
1913	13
1914	15
1915	21

Among these cases there were 19 deaths. The treatment adopted consisted in adhering as far as practicable to a carbohydrate-free diet comprising meat, milk, soups, etc. Nitric acid and various other drugs were used but no better results were obtained with nitric acid than with other remedies (cf. YARBROUGH, above). The etiology of pellagra is discussed but no new suggestions are made.

H. M.

TUCKER (B. R.). **Pellagra.** -*Internat. Clin.* 1916. 26 Ser. Vol. 1. pp. 64–78. With 1 plate.

A general survey of pellagra in all its aspects. The etiology of the disease is fully discussed as well as certain pertinent points as to the relation of the disease to poverty and other factors. [The paper is a useful resumé of much of the recent work published on pellagra but contains nothing new.]

H. M.

BURR (W.) & CADWALADER (W. B.). **A Case of Pellagra, with Autopsy, in a Child.**—*Jl. Nerv. & Ment. Dis.* 1916. Vol. 43. pp. 539–545. With 1 text fig.

A report of a case diagnosed as pellagra in which marked spinal symptoms were present; the patient died suddenly. On post-mortem examination nothing of importance was noted; it is stated that the pancreas was hard, nodular and slightly haemorrhagic and the brain somewhat oedematous.

On microscopic examination marked changes were found in the spinal cord, especially in the thoracic region; diffuse degeneration of the white matter together with degenerative changes of the anterior cells was observed. The posterior roots appeared to be normal. Other changes in the region of the fourth ventricle and nerve roots are also described.

H. M.

RIVISTA PELLAGROLOGICA ITALIANA. 1916. July & Sept. Vol 16. Nos. 4 & 5. pp. 58–61 & 74–76.—**Commissione Pellagrologica Provinciale di Vicenza. Relazione sui provvedimenti profilattici e curativi attuati durante l'anno 1915.** [Prophylactic and Curative Measures carried out by the Provincial Commission of Vicenza during the Year 1915.]

An account is given of the measures taken during the year 1915 to reduce pellagra. The Commission has carried on propaganda to lessen the amount of maize in the diet of the peasant class. In this they have been assisted by the rise in the cost of maize. Their customary inspection of the maize of commerce has been continued. Much of the report deals with the kind of crops which may suitably be grown in lieu of maize. Contrary to expectation, the unfavourable economic conditions produced by the war have not led to an increase of pellagra.

H. M.

FUSCHINI (Carlo). **L'Agricoltura contro la Pellagra. Sunto di Conferenze popolari tenute per incarico della Commissione Pellagrologica dell' Umbria.** [Summary of a Popular Conference held by Command of the Pellagrological Commission of Umbria.]—*Riv. Pellagrolog. Ital.* 1916. Nov. Vol. 16. No. 6. pp. 84–89.

A general account of pellagra in which the "spoilt maize intoxication" theory of its origin is adopted. Substitution, as far as possible, of maize by barley in human food and the use of a mixed diet are urged as preventive measures. It is suggested that the cultivation of maize should be restricted, that an early variety of maize should be grown and that the product should be carefully sun-dried. Advice is given as to the crops which may be suitably cultivated instead of maize.

H. M.

ANTONONI (G.). **La Pellagra e l'avvenire del proletariato agricolo.** [Pellagra and the Future of State Agriculture.]—*Riv. Pellagrolog. Ital.* 1916. Nov. Vol. 16. No. 6. pp. 81–82.

Many years ago, the author published a diagram showing the parallelism between the increase of pellagra and the price of grain. Owing to the higher cost of living, following the outbreak of the European war, an increase in the incidence of pellagra was expected. No such increase, however, has resulted. It is suggested that in the further development of State Agriculture lies the solution of the pellagra problem.

H. M.

KALA AZAR.

CORNWALL (J. W.). **A Contribution to the Study of Kala Azar (II).**—*Indian Jl. Med. Res.* 1916. July. Vol. 4. No. 1. pp. 105–119. With 1 plate.

For the review of the first part of this contribution see this *Bulletin*, Vol. 8, p. 403. The second part now under consideration is divided into six sections as follows :—

" 1. Can the bug transmit the infection of Kala-azar :—
(a) *by biting,*
(b) *through the medium of its faeces,*
(c) *by being devoured by some other insect or by a vertebrate ?*
" 2. The formation of the thick-tailed stage in the life-history of *Leishmania donovani* and of *L. tropica.*
" 3. *Conorhinus rubrofasciatus* as a carrier of *L. donovani.*
" 4. Further experiments on the effect of serums on flagellates of *L. donovani.*
" 5. Observations on a case of Oriental sore.
" 6. Concerning the value of the method of feeding biting insects artificially."

1. (*a*) Further experiments, similar to those set out in the previous communication were made. These point to the conclusion that *Cimex rotundatus* cannot transmit either kala azar or oriental sore by biting.

(*b*) Viable forms of *L. donovani* and *L. tropica* are apparently not passed in the faeces of *Cimex rotundatus.* Degenerated forms and free flagella are found in the intestine and rectum.

(*c*) " Infected bugs may be devoured by some other insect or by a vertebrate and the infection somehow passed on to man. If no such bug-eater which is capable of transferring the infection can be found some insect host other than the bug must be sought for."

2. " Thick-tails [*loc. cit.* p. 405] appear only on the association of flagellate culture with the stomach or intestinal mucous membrane of Cimex." They are found both when *L. donovani* and *L. tropica* are employed. They are not seen when the stomach of rabbits, fleas (*Xenopsylla*), *Conorhinus rubrofasciatus,* or ticks (*Magaropus*) is used.

" It appears that we may have two kinds of thick-tail, one formed as a preliminary to encystment, the other when de-encystment is taking place The first kind is seen when flagellates come into contact with the mucous membrane of the bug's stomach ; the second may or may not occur normally in the bug's stomach, but can be induced artificially in a few minutes by diluting the stomach contents of an infected bug with salt solution."

3. " *Leishmania donovani* flagellates do not flourish in the stomach of *Conorhinus rubrofasciatus.*"

4. The previous experiments had been conducted with equal parts of serum and flagellate culture in a hanging drop. In this further series one volume of culture was mixed with five volumes of serum in a pipette. The pipette was left at laboratory temperature for 24 hours and then microscopically examined. The conclusions arrived at were : " The fresh serums of man, goat, sheep and guinea-pig are all inimical to flagellates of Leishmania ; those of rabbit, dog, hen, and cat seem to have little ill-effect. The inimical action of a serum is destroyed by heating it to 55° C. for 30′."

5. Eight bugs were fed on an Oriental sore (from which flagellates were obtained on culture), some near the margin, others near the centre. They were kept at a temperature of 22–25° C. and dissected at intervals up to the 13th day with negative result. Two weeks later, twenty bugs were fed on the sore, half of them being kept at 18–20° C. and half at 22–25° C. Subsequent dissections proved negative though the sore was shown to be still heavily infected.

Cimex is unable to suck up tissue cells through its proboscis. The parasites being all intracellular, the bug is unable to infect itself unless they are present in the circulating blood and cannot do so directly by biting the lesion.

6. "The method of feeding insects artificially is capable of wide application."

E. J. Wyler.

da Matta (Alfr.). **Tableau synoptique de la classification des leishmanioses.**—*Bull. Soc. Path. Exot.* 1916. Dec. Vol. 9. No. 10. pp. 761–762.

In deference to the views of other workers the author has modified his classification of leishmaniasis as set out in a previous paper [this *Bulletin*, Vol. 8, p. 407]. His present classification is as follows :—

- Leishmaniases
  - Skin
    - Cutaneous
      - Hypertrophic (non-ulcerating)
        - Nodular.
        - Papillomatous or miliary.
        - Macro-tuberculiform.
        - Pseudo-verrucous.
      - Ulcerating
        - Oriental sore.
        - Atrophic.
        - Circinate.
        - Lymphangitic.
        - Phagedenic.
    - Muco-cutaneous
      - Pseudo-papillomatous.
      - Cancerous or phagedenic.
  - Visceral
    - Tropical leishmaniasis or kala azar.
    - Infantile kala azar.

E. J. W.

Aravandinos (Anast.). **Beobachtungen über die innere Leishmaniosis in Griechenland.** [Internal Leishmaniasis in Greece.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1916. Apr. Vol. 20. No. 8. pp. 193-203.

A large part of the paper is taken up with the microscopic appearances in the case of a child aged two and a half years which died of kala azar. The author draws attention to the occurrence of anaemia in children with enlargement of the spleen, in which, however, no parasites are found on puncture [see this *Bulletin*, Vol. 8, p. 1].

Mention is made of three cases of Mediterranean kala azar in which treatment by transfusion of blood from cases of Oriental sore was tried.

Some days before the transfusion the kala azar patients received an intravenous injection of "606" with the idea of so injuring the parasites as to make them susceptible to the action of antibodies in the blood of the *L. tropica* cases. The results were negative, though in one instance—a boy, six years of age -there was marked decrease in the size of the spleen with disappearance of the pyrexia. This improvement, however, only lasted two weeks.

The author advises the prohibition of dogs, as a prophylactic measure in those islands of the Grecian Archipelago where the disease is endemic.

The special susceptibility of young children to the disease is ascribed (i) to their close association with domestic animals (dogs); (ii) to their undeveloped "resistance"; (iii) to playing on the floor and spending long hours in bed, for both of which reasons they are much exposed to insect bites.

E. J. W.

ROGERS (Leonard). **Further Cases of Kala-Azar in Europeans successfully treated by Intravenous Injections of Tartar Emetic.**—*Lancet.* 1916. Nov. 4. pp. 782–785. With 2 charts.

A detailed account of twelve further cases, making a total of eighteen.

For the review of the paper dealing with the six cases previously treated by the author and Captain N. H. HUME see Vol. 8, p. 3 of this *Bulletin.* Details of these are included in the paper under consideration. The salient features of all the 18 cases are shown in the table reproduced on the following page.

The results in the new cases "fully confirm the very sanguine expectations" formed from the smaller series.

As regards duration of treatment, the injections were in most cases "continued for from several weeks to two or three months after the fever had ceased and only stopped as a rule when the body weight had much increased, the spleen become considerably reduced, the blood had approached or reached the normal as regards both the red and the white corpuscles, and the parasites had disappeared from the spleen." It is pointed out that with the adoption of a more rapid increase of dosage, as tried in some of the later cases, the period of treatment may be reduced and that further experience may show an even shorter course to be efficient. It is recommended that treatment in adults be commenced with 4 cc. of the 2 per cent. solution, that 6 cc. be given at the second injection and that at each subsequent injection 1 cc. be added, if no toxic symptoms supervene, up to 8 or 10 cc. Two cases (Nos. 16 and 17) thus treated left hospital 65 and 50 days after treatment was begun. As regards the effect of treatment upon the fever, this may be expected to be controlled after from five to ten doses given every third day, or within about a month.

In discussing the effect on the blood it is remarked that "no case in which the leucocytes have reached the normal has relapsed in our experience so that a normal leucocyte count is likely to prove a reliable indication for stopping the injections of the antimony salt." Increase of the ratio of white to red corpuscles is of good augury, as also is the rapid gain in body weight which occurs as soon as the fever ceases. The spleen is not appreciably reduced in size until the temperature has been normal for some time.

Kala Azar in Europeans treated by Tartar Emetic.

Data before and after Treatment.

Number.	Age.	Duration before admission in months.	Time in hospital.	Duration of fever.	Tartar emetic to cessation of fever.	Total tartar emetic.	Maximum dose of 2 per cent. solution.	Enlargement of spleen below ribs.	Weight on admission: Gain or loss.	Red corpuscles.	White corpuscles.	Ratio of white to red.	Parasites.	Result.
			Days	Days	cgm.	cgm.	cc.		lb. oz.					
1	18	1½	226	64	140	149	9	To navel.	89 10	3,660,000	2,000	1–1830	+	Cured.
								Just felt.	+ 16 4	5,050,000	8,500	1– 676	—	
2	28	5	64	45	96	124	8	To navel.	109 8	2,990,000	1,375	1–2170	+	,,
								2 in.	+ 17 12	..	..	..	—	
3	23	6	372	..	51	56	4	3½ in.	91 0	2,960,000	1,125	1–2631	+	Died of pulmonary phthisis.
								1 in.	— 3 0	3,220,000	1,125	1–2862	—	
4	36	12	214	35	78	326	10	To navel.	96 10	3,850,000	1,125	1–3422	+	Cured.
								1 in.	+ 22 4	5,160,000	10,250	1– 503	—	
5	38	9	195	59	73	307	10	Navel+1 in.	101 14	..	2,000	..	+	,,
								Just felt.	+ 7 12	5,120,000	6,750	1– 578	—	
6	28	4	229	145	332	580	11	8 in.	108 0	3,430,000	1,000	1–3430	+	,,
								2 in.	+ 15 12	3,500,000	6,500	1– 538	—	
7	32	8	179	56	180	250	10	2½ in.	83 8	1,740,000	875	1–1989	+	,,
								..	+ 31 0	3,500,000	6,250	1– 560	—	

[illegible]	[illegible]	1	166	69	124	314	8	Just felt.	+ 24	2	5,050,000	5,250	1– 918	—	,,
9	38	18	73	..	..	243	10	Navel+½ in. Smaller.	132 — 1	4 4	4,240,000 4,150,000	3,125 5,000	1–1397 1– 880	+ ..	Improved.
10	13	3	161	123	223	243	10	4 in. 2 in.	63 + 14	4 12	4,090,000 5,010,000	2,375 4,250	1–1722 1–1178	+ —	Cured.
11	17	3	114	51	66	254	10	Navel+½ in. 1½ in.	103 + 46	2 0	.. 4,480,000	.. 5,500	.. 1– 600	+ —	,,
12	47	3	97	23	90	382	10	1¼ in. Not felt.	106 + 24	4 0	3,620,000 4,380,000	1,125 6,000	1- 3218 1– 726	— —	,,
13	20	1	144	42	75	362	10	4 in. Not felt.	76 + 18	8 0	3,620,000 4,690,000	1,125 9,250	1- 3218 1- 507	+ —	,,
14	48	3	36	35	188	..	10	1½ in. ..	.. ..		3,940,000 5,040,000	1,500 2,000	1–2627 1- 2520	+ ..	Greatly improved.
15	45	6	35	..	..	68	5	3 in. 2 in.	91 + 6	0 0	2,540,000 ..	750 ..	1–3387 ..	+ ..	Improved.
16	17	3	85	20	206	484	10	3½ in. Not felt.	83 + 7	0 0	3,500,000 5,210,000	2,125 10,250	1–1647 1– 508	+ ..	Cured.
17	36	9	..	13	42	..	10	6 in. Not felt.	100 ..	8	3,020,000 5,570,000	1,375 4,000	1–2197 1–1392	+ ..	,,
18	30	4	..	36	86	..	10	2 in.	..		3,830,000	3,750	1–2197	+	Greatly improved.

Summarizing his results the author remarks that of the 18 consecutive cases, 13 were cured ; 2 were greatly improved and still under treatment at the time of writing ; 2 improved, left hospital prematurely ; 1 died of phthisis. Cases are defined as " cured " when " the fever has completely ceased for two or more months, together with considerable gain in weight and a restoration of the blood, and especially of the white corpuscles to the normal, and decided diminution in the size of the spleen."

The author suggests that in view of his results " the use of tartar emetic appears to be worthy of further study in human trypanosomiasis and sleeping sickness in Africa."

E. J. W.

MUIR (E.). **Further Notes on the Treatment of Kala-Azar with Antimonium Tartaratum.**—*Indian Med. Gaz.* 1916. Oct. Vol. 51. No. 10. pp. 368–369.

For the author's first communication see this *Bulletin*, Vol. 8, p. 3.

About 100 cases have now been treated, with favourable results, the diagnosis in the majority being confirmed by finding the parasite in the blood or spleen.

There is often a marked reaction soon after the injection, in patients with a large number of parasites, the temperature rising to 103° or more, but falling again in about two hours. The reaction becomes less marked as recovery occurs and is not produced in patients not suffering from kala azar. Samples of antimony tartrate vary in purity, the less pure being liable to evoke " a very strong reaction, quite out of proportion to their therapeutic value."

The injections of tartar emetic should be supplemented by giving the drug by the mouth as a powder according to the following formula, when it is seldom found to cause vomiting :—Antimon. Tartar, gr. i, Acid Tannic. grs. iii, Sod. Bicarb. grs. iv. The powder is given every morning and, if well borne, also every evening.

Injections should be continued once a week for at least two months after fever has been absent for one month. For such patients apparently recovered, who could not conveniently present themselves for weekly treatment, injections of metallic antimony were used, the following method being employed :—

" Two grains of metallic antimony is finely powdered. It is then mixed with 5 cc. of glucose syrup and ground up again in a glass mortar for about five minutes.

" The whole is then boiled in a test-tube and shaken up and poured into the 5 cc. syringe, and at once injected into the vein. The antimony is so finely powdered that it almost all remains in suspension and enters the vein.

" If the amount in the test-tube and syringe be measured it is found to be less than half a grain. Thus a little more than 1½ grains have been injected."

The author was led to use metallic antimony on the recommendation of Dr. BRAHMACHARI [*loc. cit.* p. 5] who claims, as one of the advantages of this method, that fewer injections are required to produce a permanent cure.

E. J. W.

RAI HARI NATH GHOSH BAHADUR. **Further Reports of Recovery of Cases of Kala-Azar by the Intravenous Injection of a Compound Solution of Sodium Antimony Tartrate.** — *Calcutta Med. Jl.* 1916. Oct. pp. 97–104.

A description of four cases successfully treated by the intravenous injection of sodium antimony tartrate with sodium cinnamate and berberine hydrochloride.

A case of recovery by this treatment has been previously published by the author [see this *Bulletin*, Vol. 8, p. 6].

Attention is drawn to the occurrence in the urine of some patients of albumose. The author considers this to be a clinical feature of the disease.

E. J. W.

JACKSON (T.). **A Case of Kala-Azar treated by Intravenous Injections of Tartar Emetic at St. George's Hospital, Bombay.**—*Indian Med. Gaz.* 1916. Dec. Vol. 51. No. 12. p. 459. With 6 charts.

A case of a European girl aged 16 successfully treated by intravenous medication with tartar emetic according to the now well-known method.

The diagnosis was confirmed by spleen puncture.

An interesting feature of the case was its complication by an attack of benign tertian malaria, the infection being probably of old standing. Prior to the first intramuscular injection of quinine administered for this complication the recession of the spleen had apparently come to a standstill. "After the quinine treatment began the enlargement disappeared as if by magic."

E. J. W.

CANAAN (T.). **Die Jerichobeule.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1916. Mar. Vol. 20. No. 5. pp. 109–119. With 2 figs.

Oriental sore, confirmed by microscopic examination, is endemic in Jericho. Two cases (out of a total of 26 observed within two years) are described, in which the infection appears to have been undoubtedly acquired in the town.

Multiple lesions are the rule. Single sores are rare and it is unusual for cases to present less than four.

The infective seasons appear to be late autumn and especially late spring. A case is described in which treatment by neosalvarsan effected an almost complete cure within three weeks. There were 55 "quite typical" lesions, but it is not definitely stated that leishmania were found.

E. J. W.

LAVERAN (A.). **Singe patas infecté de bouton d'Orient.**—*Bull. Soc. Path. Exot.* 1916. Dec. Vol. 9. No. 10. pp. 749–750.

A young female monkey (*Cercopithecus patas*) was successfully inoculated from a mouse with *L. tropica*, the technique employed being that already described [this *Bulletin*, Vol. 8, p. 10].

Up to the present M. Laveran has produced Oriental sore in three other species of monkey, viz., *Macacus sinicus*, *M. cynomolgus*, and *M. rhesus*.

E. J. W.

ESCOMEL (E.). **Le traitement actuel de la Leishmaniose américaine.** —*Bull. Soc. Path. Exot.* 1916. Nov. Vol. 9. No. 9. pp. 699–702.

The most successful present treatment of American leishmaniasis consists in the intravenous administration, combined with the local application, of potassium antimony tartrate.

The local treatment of the skin lesions is as follows :—

The ulcers are cleaned up with fomentations for 24 hours. The cleaned surfaces are then anaesthetized with a mixture of equal parts of cocaine, menthol and carbolic acid, sprinkled with finely powdered antimony tartrate, covered with sterile gauze and wool, and bandaged. On the following day the ulcers are wiped clean and an ointment of balsam of Peru 10 gm., oxide of zinc and oxide of bismuth aā 20 gm., white vaseline and lanoline aā 40 gm. is used. This is applied with pad and bandage every third day.

At the second or third dressing a slough will have separated, leaving an underlying deep violet surface. The treatment with powdered tartrate and consequent sloughing is repeated until a healthy bright red surface is left. From two to six such applications may be required.

In some cases local injections of cocaine or novocaine were used in addition to surface anaesthesia.

Good results were also obtained by applying the galvanocautery to the base and borders of the ulcerated surface after removal of the slough.

The local treatment of the mucous membrane lesions is as follows :—

Scabs are removed by lavage with a solution of bicarbonate of soda. The parts are then anaesthetized with a solution of cocaine 1 gm., distilled water 100 gm., carbolic acid crystals 1 gm., and sprayed with a 1–2 per cent. solution of tartrate in distilled water.

This treatment is carried out every one to three days according to the patient's susceptibility, but every 4–8 days the tartrate is used in saturated solution, the application being then made by means of a pledget of cotton wool.

E. J. W.

SNAKE BITE.

ACTON (Hugh W.) & KNOWLES (R.). **Studies on the Treatment of Snake-Bite.**—*Indian Jl. Med. Res.* 1914. July. Vol. 2. No. 1. pp. 46–148; and 1915. Oct. Vol. 3. No. 2. pp. 275–361. With 14 Charts.

This paper is a fine product of an exact experimental method at once well reasoned and profound; it throws the searchlight into many dark places, straightens some crooked ways, and is altogether illuminating and inspiring. To do it justice in an abstract is an impossibility; we can merely indicate the nature of its contents and select some of its practical lessons.

So far as it goes it consists of four sections. The first deals with the relative toxicy of different Indian venoms and their probable lethal dose for man, and has as its main object the elucidation of the true connotation of the term "snake-bite."

The second section contains careful estimates of the value of remedies of a mechanical or physical kind, and the third takes into very full and critical consideration the neutralizing power of locally applied chemical reagents, such as permanganates, hypochlorites, mineral chlorides, etc.

The fourth section, which is somewhat more speculative, though not a whit less penetrated with discernment and refined by experiment than the others, deals mainly with the biochemical aspects of the subject—the composition of venoms and the nature of their toxic elements, the nature and behaviour of their antitoxins, and all the paraphernalia of antivenene therapy.

After some sane and judicious prolegomena the authors commence operations by describing methods of making snakes render their venom, and computing the different amounts yielded by some of the commoner Indian species. Using for the most part fresh-caught snakes and milking them without delay, an extensive series of observations was made (the details being recorded in an appendix) from which the following means specific yields, expressed in milligrammes of desiccated venom, are calculated:—

Common cobra (50 observations) mean yield ..	317	mgm.
Common krait (48 observations) mean yield ..	8·17	,,
Banded krait (27 observations) mean yield ..	64·4	,,
Russell's Viper (6 observations) mean yield ..	108	,,
Echis carinatus (57 observations) mean yield ..	18·39	,,
Lachesis gramineus (15 observations) mean yield	30	,,

The practical purpose of accurate knowledge on this point is obvious.

The yields from three specimens of *Callophis macclellandii* were respectively 0·2, 2·0 and 6·0 mgm.; and from two specimens of King Cobra 100 and 195·5 mgm.; but as the latter were not full grown, and seem not to have been fresh caught, these yields can hardly be normal; at any rate, the authors' inference that the King Cobra is probably less prolific in venom than the cobra is not supported by an isolated observation of the reviewer, made more than twenty years ago, on a large new-taken specimen of the former species.

After describing very precisely the anatomical mechanism of the bite, and after discussing some discrepancies in a commonly accepted doctrine that the relation between the body-weight of a toxified animal and the time-effect of the toxin is a direct and simple one, the questions

of the comparative toxicy of different species of venoms and of minimum lethal dose are considered, with particular reference to *subcutaneous absorption* as being most nearly concordant with the ordinary issues of snake-bite in medical practice.

As regards comparative potency of venoms the authors' work is in the main of a confirmatory kind, but some of their observations are new, or suggest novel interpretations. Thus in cobra venom, besides the haemolysin and the prepotent neurotoxin, an element that stimulates cardiac contraction is inferred, revealing itself particularly in a case (treated by permanganate, and by antivenene, ozone, and artificial respiration) in which the patient's heart continued to beat for two hours after the last spontaneous act of breathing. The venom of the King Cobra—practically identical with that of the cobra—is for monkeys more and for rats less toxic than the latter. That of the common krait is more profoundly neurotoxic than the cobra-product, convulsions being less manifest and recovery after severe symptoms being a rare event, though the time-effect is later. That of the banded krait is intermediate between cobra and common krait. The action and the minimum lethal estimate of Russell's viper venom, administered subcutaneously, may be obscured by the possibility of local thrombosis and occlusion. The minimum lethal dose of *Echis carinatus* venom for a monkey of 5,300 gm. was found to be 0·5 mgm. or less. These are just a few interesting points.

The estimates of the minimum lethal dose *for man* of the different species of venoms have been compiled with much ingenious labour which, however, can here be followed only in principle. The first step was to obtain as a standard of comparison the M. L. D. for man of one particular species, the common cobra. This has been estimated by Lamb as 15 to 17·5 mgm., by Calmette as 10 mgm., and by Fraser as 31 mgm., but the authors naturally base their edifice of inference on foundations of their own construction.

To arrive at the required standard they first of all studied from classical authorities a considerable number of fatal cases of cobra bite—all either untreated or treated by methods that could not have influenced the result—in which the time of infliction of the bite and the time of the fatal issue are recorded approximately, in order that they might get a series of measured time mortalities, or "death periods."

They next infer that since in experiments with cobra-venom and lower animals the relation between the "death period" and the amount of the toxic dose can be shown in the form of an asym-ptotic curve, a similar toxicy-curve capable of mathematical treatment, can be plotted for man from authentic clinical data; and by ultimate mathematical calculations they find that the subcutaneous dose of cobra venom that should *just fail* to kill a man of standard weight is 13·6 mgm. and so assume that 15 mgm. would be just fatal.

Having thus established a minimum lethal dose of 15 mgm. of cobra-venom as a standard of comparison, the authors fix the probable minimum lethal doses of other species of venoms by another reasonable postulate, and that is that the relative potency of these other venoms upon monkeys—as determined by a series of experiments—holds good for man also. On this assumption they estimate the minimum lethal dose (expressed in milligrammes of desiccated venom, and administered by *subcutaneous injection*) of the several following venoms to be for

man:—*Naja tripudians*, 15; *Naja bungarus*, 12; *Bungarus candidus*, 1; *Bungarus fasciatus*, 10; *Vipera russellii*, 42; *Echis carinatus*, 5; *Lachesis gramineus*—an amount probably greater than this snake could shed at a given moment.

Having fixed, approximately, the M. L. D. of these venoms for man by subcutaneous injection, the authors proceed to estimate the amounts of venom that these several species of snakes may inject at a bite—a question of the greatest importance. They give reasons for assuming that these amounts may be taken as two-thirds of the mean of a large series of experimental yields of "milkings," and estimate them as follows, in milligrammes of desiccated venom:—*Naja tripudians*, 211·3; *Bungarus candidus*, 5·4; *Bungarus fasciatus*, 42·9; *Vipera russellii*, 72; *Echis carinatus*, 12·3; *Lachesis gramineus*, 14. The estimate of 100 given for the King Cobra (*Naja bungarus*) surely requires further investigation. In the above estimates it is assumed that the snakes are healthy, and in full natural vigour—not exhausted, or captive, or roused from hibernation. The authors however remind us of contingencies that may prevent or hinder lodgement of venom in the bite—e.g., failure to close the jaws, deficient elevation of fangs, mal-apposition of orifices of poison duct and fang, also starting of the victim, shaking off the snake before it has shut its jaws, interference of clothing, all important points in the prognosis of snake-bite.

Having thus greatly clarified and concentrated our ideas of snake-bite, the authors proceed to the subject of treatment, and particularly to treatment by ligature, by amputation, etc., and by the local injection of chemical reagents. And here again by exact experimental methods they introduce rule and order into what has too often been a confused ferment of conflicting opinion.

As regards simple ligature, the animals used were rabbits; lethal doses were injected hypodermically into the distal part of a hind leg, and a ligature was applied *immediately* and kept on for 20 minutes; unligatured rabbits were used as controls. In the experiments with cobra venom the "death period" was delayed by ligature. In the experiments with Russell's Viper venom, not only was the "death period" prolonged and not only was it found that ligature might lock up the venom *in situ* and so localize its action, but 7 of 23 ligatured rabbits that received doses varying from 5 to 20 mgm. survived, the controls in all but one of the 7 dying. The ligature recommended is $\frac{3}{8}$ inch rubber tubing. The authors therefore conclude that an efficient ligature *if applied at once* is always of value as, at the very least, it provides more time for the employment of systemic remedies and gives the latter more opportunity for action.

As regards simple amputation (without ligature) anaesthetized dogs and monkeys were used, and cobra venom was injected, subcutaneously as far as the situation admitted, into the tip of the tail, and the tail amputated at intervals in successive cases of 1 minute up to 10 minutes. In not one of four dogs, each of which received many M. L. D., had amputation any effect. Of ten monkeys each of which received 10 M.L.D. and suffered amputation from one up to ten minutes afterwards, nine survived, though three of them had severe symptoms. The authors therefore conclude that simple amputation would be of value in the case of bites on fingers or toes, if it be done within a few minutes.

A few experiments on the effect of compression of limb were made;

and these as well as incision, excision of bite, electrolysis, irradiation, cauterization, and bleeding and perfusion are all discussed and fairly criticised, but are dismissed as at best ineffective.

The experimental work on local remedies is particularly full and illuminating, but only the bare results of some of the many ingenious experiments recorded, and the general inferences drawn, can now be noticed.

Using rats and subcutaneously administered lethal doses of cobra-venom followed immediately by injections of solutions of potassium permanganate, zinc permanganate, calcium permanganate, gold chloride, and iodine trichloride, a 5 per cent. solution of gold chloride was inferred to be the most powerful local neutralizer of the venom as estimated by prolongation of the "death period."

Prior work on potassium permanganate is reviewed, and the authors take pains to confirm the statement that the *intravenous* injection of this salt is not merely useless but intrinsically dangerous, so little as 5 cc. of a one per cent. solution so administered to a rabbit having caused immediately fatal thrombosis. After due experiment the authors consider the Lauder-Brunton snake-bite lancet "wholly unreliable."

In their experiments to determine the exact effect of the several local neutralizers the authors used monkeys; a measured quantity of venom was dissolved and injected strictly subcutaneously, and *immediately* afterwards a measured strength of the neutralizing agent was injected into the very site with another needle. The following is a bare summary of the results for cobra venom (for viperine venoms the results were even better):—

In 24 experiments, conducted as outlined above, with 10 cc. of a 5 per cent. solution of permanganate (K, Zn, Ca) there were 10 survivors, one of which had received 80 mgm. of venom.

Iodine trichloride, 5 per cent. solution of the fresh-made salt, gave as good results as permanganate.

In five experiments with 10 cc. of a 5 per cent. solution of gold chloride there were four survivors from doses of 20 to 80 mgm. of venom.

In five experiments with 10 cc. of a 5 per cent. solution of gold chloride injected after a delay of three minutes there were three survivors from doses of 20 to 60 mgm. of venom.

Subcutaneous injection of strong solutions of these neutralizers is not like intravenous injection dangerous, but it causes local gangrene. Their neutralizing action is purely local, acting only on the venom that they can reach *in situ*; they have no effect upon any venom that has been absorbed into the circulation.

The authors' conclusions then are that these local remedies are of undoubted value in treatment if they can be injected *at once* before a fatal amount has been absorbed, but they are of no use whatever in a case of snake-bite seen some hours after the occurrence. When injected *at once* (and especially when an efficient ligature is applied at the same time) they can be relied on to destroy such venom as they come in contact with. The best of them is a 5 per cent. solution of gold chloride.

Having searched out experimentally, with proper controls, the value, and emphasized the limitations, of local remedies, the authors enter by the same arduous experimental road as far as possible, and

with the same discerning eye, and also with an admirable dialectical skill, a difficult biochemical territory, into the rarified heights of which, where they are engrossed not so much with the direct therapeutic uses of antivenenes as with the exact nature, composition, and interactions of the toxic and anti-toxic principles we shall not attempt to follow them. Out of the chemical analyses of venoms and investigations of the nature of the antivenomous essence, a few facts and conclusions may be picked that can easily be focussed by the coarse adjustment. Thus by reference to earlier experiments and by fresh experiments with tissues *in vitro* the authors collect evidence that the neurotoxin of cobra venom is absorbed quickly but is not fixed quickly or firmly, whereas with the venom of Russell's viper absorption is slow but fixation is firm; hence—and direct experiment is confirmatory—delay in administering antivenine is dangerous in viper bite, but not necessarily so in cobra bite. Again the union of venom and antivenene *in vitro* is instantaneous. Another point of practical interest upon which the authors' experiments give instruction is that in cobra-bite half-hourly intermittent doses of antivenene give almost as good results as administration of the whole dose at once, whereas in Russell's viper-bite the whole dose should be given at once—for man 50 to 100 cc. intravenously, or 100–200 cc. intraperitoneally. In connection with the known weakness of antivenenes the question of strengthening them by concentration or by "activation" is discussed with an eye to further investigation.

We may conclude with an account of the authors' experiments to test in the severest manner the practical application of their several lines of research. Six monkeys were inoculated subcutaneously, each with 25 lethal doses of cobra venom. Three minutes afterwards a ligature was applied and was kept on for 20 minutes. *After* the ligature was removed (i.e., 23 minutes after inoculation) 10 cc. of a 5 per cent. solution of gold chloride were injected into the site of inoculation. Thirty minutes afterwards doses, varying from 20 to 60 cc. of antivenene were injected intraperitoneally. Of these six monkeys five survived and one died after an interval of 80 minutes. Three controls were inoculated each with 25 lethal doses at the same time; one of them received no treatment, and died in 43½ minutes; a second was treated with the ligature only, and died in 57½ minutes; the third was treated with the ligature and the gold chloride, but not with any antivenene, and though it suffered severely it survived. Of the five survivors of the complete experiment four which had, some 20 and some 40 cc. of antivenene showed "very slight symptoms" and one (which had 60 cc. of antivenene) had no symptoms at all.

The valuable instructions for the treatment of snake-bite, towards the end of the paper, need not be summarized, but we may quote the "Final Conclusion" which is as follows:—

"(1) Apply a firm ligature immediately.

"(2) Impregnate the whole area of the bite with a hypodermic injection of a strong solution of gold chloride.

"(3) Inject from 100 to 200 cc. of antivenene intravenously, if the biting snake be suspected to have been a cobra or Russell's viper. If symptoms of venom intoxication come on, further and even larger injections of antivenene should be given intravenously.

"With sera concentrated 10 times, a dose of 20–60 cc. should save every case of cobra bite."

A. Alcock.

MISCELLANEOUS.

CARTER (D. W.), Jr. **Hematochyluria. Observations on the Fat Content of the Urine and the Pathology of the Condition.**—*Arch. Intern. Med.* 1916. Oct. 15. Vol. 18. No. 4. pp. 541–550. With 3 text figs.

The patient was a Barbadian mulatto, aged 27, who had left Barbados twelve years. In 1903 one testicle became enlarged. In 1911 and on four occasions later he had acute retention of urine. The urine on admission, in 1914, was reddish brown and turbid, albumin 0·2 per cent. It separated, after a gelatinous stage in many specimens, into a narrow, bright red zone, a pinkish white zone and on top a narrow milky zone; no filaria embryos were found. A differential blood count showed 25 per cent. eosinophiles. Repeated blood examinations, day and night, failed to discover filaria embryos. The temperature was irregularly remittent. A full account is given of the case with the results of a cystoscopic examination. Improvement, with cleared urine, followed an intravenous injection of salvarsan.

The fat percentage of the urine was estimated, by ether, at each voiding between September 14th and November 2nd, as is shown in a table. Other, graphic, tables show the total daily amount of fat ingested, the output of fat in the urine and the quantity of urine, under fat-poor and fat-rich diets. The pathology of this and other cases is discussed. The summary is as follows :—

"In a patient with chyluria the fat content of the urine varied markedly with the fat content of ingested food. On a fat-poor diet it averaged 0·35 per cent. and on the house diet it rose to from 1 to 1·4 per cent. With diet containing a daily average of 66·39 gm. of fat the average daily output of fat in the urine was 6·45 gm. The amount of fat in the urine, however, did not increase in direct proportion to the amount of ingested fat. In some cases chyle escapes directly into the bladder or ureter through a fistulous opening; in other cases the chyle finds its way into the urine within the kidney. In some cases the fluid entering the bladder is true chyle, in others it is lymph."

Fourteen references to published cases are given.

A. G. B.

HERRICK (Alfred B.). **Treatment of Compound Fractures in the Tropics.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1915. Apr.-Dec. Vol. 8. Pts. 1 & 2. pp. 45–53.

The author writes from an experience of 1,200 fractures treated in Ancon Hospital in 1910–12. Of these 434 were of the long bones, 74 or 17 per cent. being compound. The author writes :—

"This climate influences the method of treatment. Here, adhesive extension is rather uncertain owing to the increased moisture of the skin. This is so especially in extension of the thigh, where it is necessary to use sufficient weight to counteract the strong thigh muscles. In several cases in the early days, we had all the outer layer of the skin come off with the adhesive a few days after application. Likewise, plaster is uncertain owing to the humidity here. In the dry season we can make use of it, but during the wet season which is the greater part of the year, it is impossible

to foretell whether the plaster cast applied will last more than a few days. I have occasionally seen plaster fail to harden, and frequently to soften in a few days. Thus, two of our most important methods of external immobilization cannot be relied upon in this climate at all times.

"This, of course, has directed our attention more and more to immobilization by internal splinting, and our results in the use of plates for internal splinting have been such as to justify our continued use of them in properly selected cases of compound fractures."

In the operative treatment of compound fractures the author relies on trimming of the soft parts with forceps and scissors, frequently changed, and tincture of iodine; he has given up irrigation. For the interesting details the paper must be consulted. There are no indications of the character of the results.

A. G. B.

QUALLS (Guy L.). **Wassermann Test Survey on Colored Employees, admitted to Surgical Wards, Ancon Hospital. (A Preliminary Report).**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1915. Apr.-Dec. Pts. 1 & 2. pp. 141–144.

This work, it is stated, was undertaken by the surgical staff of Ancon Hospital and Board of Health Laboratory to ascertain, if possible, the percentage of syphilitics admitted to hospital clinically showing no evidence of the disease. The paper is described as a "meager preliminary report." The greater part is given to statistics published by VEDDER.* In a total of 1,456 coloured troops in garrison the test showed 22 per cent. to be positive syphilitics, 13·26 to be probable syphilitics, the total estimated percentage being 35·3. In 531 men of the Porto Rican Regiment the latter figure was 53.

"Vedder further states that this would seem to indicate that possibly syphilis is as important as hookworm infection in the production of the anemias and debilitated conditions said to be so common among the poorer inhabitants of Porto Rico. Several of the double plus cases in his series were diagnosed as anemia without hookworm. The above mentioned investigator states he is inclined to believe that too much importance has been ascribed to the hookworm, especially in the Southern States."

In the author's series the patients were negro surgical patients, natives of the West Indies. The total estimated percentage of infection in 100 showing no physical evidence of the disease was 15; all denied knowledge of infection.

A. G. B.

HERRICK (Alfred B.) & RUNYAN (Raymond W.). **Inguinal Hernia.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1915. Apr.-Dec. Vol. 8. Pts. 1 & 2. pp. 147–154.

In the two years 1913–14, 391 patients with inguinal hernia were operated on in Ancon Hospital; 56 of these had double hernia. Of the 391, 332 were employees of the Isthmian Canal Commission. It is with these that the paper deals. After remarks on the age and sex incidence the following table is given to show the incidence on the races

* Bulletin No. 8, War Department, June 1915.

concerned. The "Europeans" are labourers from Southern Europe, mostly Spaniards.

Nationality.	Number.	Employees. Rate per 1,000.	
		1913.	1914.
United States	74	8·34	·42
European	87	18·29	13·48
Blacks	171	4·73	2·58

In this series of cases 56 patients had direct hernia, and 17 of these were double. This is a much larger proportion than is met with elsewhere—direct herniae are said to form 3 to 5 per cent. of all cases—and was especially marked in the white employees. Lymph varices were mistaken for hernia several times. They are usually "multilocular cystic tumours extruding along the spermatic cord." "They always occur in negroes and are frequently associated with the enlarged, soft, freely movable inguinal or femoral glands which are characteristic of filariasis." The authors nearly always operate on hernia. In general, they use the Ferguson closure for all oblique herniae and the Bassini in the direct variety. Their technique is described.

Of complications found at the operation hydrocele was noted 16 times, sliding hernia 15, and lymph varix, 9 times. As the population is a shifting one the number of recurrences cannot be accurately determined.

A. G. B.

TREIBLY (C. E.). **Climatic Bubo.**—*U. S. Nav. Med. Bull.* 1916. Oct. Vol. 10. No. 4. pp. 661–663.

The author, Assistant-Surgeon, U.S. Navy, believes that true climatic bubo is met with only in the Tropics, and that it is a condition *per se* "with no reasonably assignable aetiology." In "about 25 or more cases" there were no organisms demonstrable. No venereal history was obtained except in one instance when the patient admitted gonorrhoea over a year before. "Absence of venerealism" is considered one of the diagnostic points. The only "real treatment" is considered to be excision and enucleation with careful search, when all seem removed, for elusive glands.

A. G. B.

BOUCHER (H.). **Un cas de tuberculose zoogléique à la Côte d'Ivoire.**—*Bull. Soc. Path. Exot.* 1916. July. Vol. 9. No. 7. pp. 416–419.

The case was that of a negress, aged 35 years, who for seven years had suffered from caries of the left os calcis, as the result of a puncture from the seed of a palm. As an incidental result of the lesion patches of achromasia, of a reddish black hue, appeared in various parts of the body and the patient, as a consequence, believing herself to be leprous, at last sought medical advice.

Upon examination, the patient exhibited loss of flesh, pallor of the mucous membranes, friction sounds at the apices of both lungs, but without cough, and also mitral stenosis. The liver and spleen were both tender to palpation, but not much enlarged. The abdomen was generally tender, resonant in some parts and dull in others, but contained no fluid. The left heel showed five fistulous openings at the junction of the plantar with the dorsal skin, and a scar on the plantar surface. An operation was performed on the calcaneum, by the lifting of a flap of skin, and a sequestrum measuring 3 by 2 centimetres was removed from the inferior aspect of the bone. The granulations and fistulae were then scraped, and the skin replaced with a drain inserted. Eleven days after operation the patient became comatose and died. An autopsy was not performed.

Microscopic examination of the pus obtained from the lesion revealed the presence of a cocco-bacillus, not acid-fast, and clumped in zoogloea-form. Cultures gave the following results :—

Broth.—Uniform turbidity at the end of 24 hours, with a slight pellicle on the following day. This became more marked on the third day, when there appeared a deposit, which gradually augmented in thickness.

Potato.—Clear white colonies, forming on the second day a compact coating. This began to turn yellow on the fourth day and turned to a creamy brown on the eighth. Thickness 2 to 3 mm.

Agar.—Clear white growths, which became abundant at the end of 48 hours. In the water of condensation abundant deposit by the third day, and the layer of growth became yellow by the eighth day.

Agar-gelatine slope.—The same characters.

Agar-gelatine in puncture.—White growth along the puncture in 24 hours. White layer on the surface by the third day.

Neutral-red agar-gelatine. More abundant growth. The lower half of the medium became fluorescent on the third day, and the whole on the eighth.

Sabouraud's glucose-agar.—White prominent colonies, 1 mm. in diameter, resembling those of BRISOU's coccus, slower growth than on simple agar.

Milk.—No alteration.

Broth with the addition of lactose and alkaline carbonate.—No development in the first two days. Gas and turbidity on the third. Deposit at the bottom on the sixth day.

Under the microscope, the pellicle formed on the surface of the broth was shown to be formed of a number of zoogloeal masses, consisting of cocco-bacilli not exceeding 2μ in length. On agar the bacillus attained 5μ in length, along with shorter specimens clubbed at one end. A guinea-pig was inoculated on the inside of the thigh, and five days afterwards there appeared an ulcer, which crusted over and presented at its base numerous zoogloeal masses. The scab fell off in another five days and the sore then commenced to heal.

As far as the author's experiments showed, this bacillus exhibited all the characters of MALASSEZ and VIGNAL's cocco-bacillus, with the exception of the fermentation of lactose. The author adds that he was much troubled by the contamination of his cultures by the ova of certain little insects belonging to the family of Psychodidae, which laid their eggs on the cotton-plugs of the cultivation tubes, and under the edge of the covers of the Petri dishes, being apparently attracted by some odour proceeding from the growths of this particular bacillus.

J. B. Nias.

MAYO (William J.). **A Consideration of some of the Maladies in which Splenectomy may be indicated.**—*Lancet.* 1916. Nov. 25. pp. 889–892.

One hundred and thirty-five splenectomies have been performed in the author's Clinic, with 12 deaths, a mortality of 8·5 per cent. He classifies the "diseases with which the spleen is concerned" in three groups: (1) splenomegalias of parasitic origin; (2) splenomegalias of probably toxic origin associated with anaemia and cirrhosis of the liver; and (3) splenomegalias associated with blood dyscrasias. These groups are considered in turn. The cases of the first group were splenomegalies of syphilitic and pyogenic origin. The author writes:—

"To sum up, it may be said that splenectomy is a curative measure in properly selected cases of splenic anaemia, haemolytic jaundice, and allied states, and that it may be curative in certain as yet little understood conditions which are confused with pernicious anaemia, leukaemia, and cirrhosis of the liver. Splenectomy is of value in certain types of parasitic splenomegalia—notably, malaria and syphilis. It is of value for the palliation of some types of pernicious anaemia. In portal and biliary cirrhosis associated with splenomegalia splenectomy may have a field of usefulness, but there has not been sufficient experience with it in these conditions to furnish reliable data. In true leukaemia splenectomy does not appear to have standing, but in connexion with the use of radium it is at least to be considered."

In an earlier part of the paper, with reference to the accuracy of the results obtained by percussion, he states that in the large majority of cases little real knowledge of the physical condition of the spleen will be obtained unless it can be felt by careful palpation on full inspiration with the patient lying on the right side.

A. G. B.

HALLENBERGER. **Beitrag zur Pathologie und pathologischen Anatomie in Kamerun.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1916. Aug. Vol. 20. No. 16. pp. 382–397. With 3 plates.

A form of croupous *pneumonia* which is fairly frequent among the natives in South Cameroon is due, the author says, to a Staphylococcus. He has several times grown *S. albus* in pure culture from the blood of patients as well as from the heart blood and lung exudate of the recently dead. Another form of pneumonia, which is very severe and leads to death with marked icterus in 1–2 days, is attributed to a haemolytic Streptococcus, *S. longus*. This also has been recovered from the blood. At autopsies of the first named form purulent meningitis was frequent.

Two cases are detailed having symptoms suggesting tuberculosis of the lungs but the author attributes the condition to a spirochaete. One was an old Coaster, the other a native. The latter was much emaciated and was sent to hospital as (?) phthisis. He had coughed for some weeks. There was irregular fever and signs of catarrh at the lung apices and superior lobes. The sputa were muco-purulent. Tubercle bacilli were carefully sought but never found, whereas numerous spirochaetes of the *schaudinni* type were constant. The patient was going downhill and the author decided to give an injection of salvarsan (0·3 gm.). His signs promptly cleared up, his cough and spirochaetes disappeared, a week later the injection was repeated and in another week the patient was discharged well and in a good state of nutrition.

The European's case was similar. The salvarsan injection (0·4 gm.) had such an effect that though he could hardly drag himself to the hospital, on the fourth day he went out briskly, quite well. Two months later he said that in his African career he had never been so fit. The author admits that the connection between the condition and the spirochaetes is not proved.

Three cases of *paratyphoid B*, one European and two natives, were diagnosed by culture of the bacilli and by Widal.

In a similar paper by LÖHLEIN [this *Bulletin*, Vol. 2, p. 106] it is concluded that the *pseudo-lepra* described by PLEHN does not exist in Cameroon, these cases being true leprosy in spite of the non-finding of the bacillus. The author agrees with LÖHLEIN. The lesions often take the form of red-brown spots with a somewhat raised, scaly edge; there may be no disturbances of sensation. As a matter of fact lepra bacilli can be easily demonstrated by the antiformin method, the details of which are given. The scales from the edge of the spots are treated with a 15 per cent. solution till they are completely dissolved. Some of these early cases were improved by atoxyl, but the war stopped observation.

Two cases of *goundou* are noted, a disease not previously reported, the author thinks, from Cameroon; they occurred in 8-year old children. Both had the skin lesions of yaws six months before. The Wassermann was positive and injection of salvarsan relieved the pain and brought the process to a standstill. He has no hesitation in naming this disease periostitis ossificans framboesica. [CASTELLANI and CHALMERS call this condition, after BRUMPT, pseudo-goundou and consider that true goundou is a disease *sui generis*.]

A case of *pinta* is figured. An aspergillus was found; the author does not think the condition is very frequent in the colony. Two cases of *elephantiasis* of the labia are figured; such cases are rarely seen though the disease is common in man. A case of elephantiasis of the lower lip also is figured; in the operation the knife grated against several calcified filariae.

A curious kind of tumour was seen in a native who came for treatment for yaws. In the floor of the mouth was a swelling as large as a pigeon's egg coming from the root of the tongue and having several finger-like processes. These are shown, not very clearly, in a photograph. A piece was removed and examined with the resulting diagnosis—Plasmacytoma ? Aetiology. It might have been a manifestation of yaws as the patient believed.

Other diseases described are, leukaemia, amyloid degeneration of liver and spleen in a beriberic patient, and sarcomata. Some of the tumours and their microscopical sections are figured.

A. G. B.

JOJOT (Ch.). **Aperçu médical sur la campagne du Cameroun de 1914-1916.** *Bull. Soc. Path. Exot.* 1916. Oct. Vol. 9. No. 8. pp. 584-591. With a map.

The author gives an account of the country, its physiography and climate with a map, whereon the direction of the marches of the Allied columns is shown by arrows. His account is based on observations made at the hospital at Duala in 1914–16 and information obtained

from medical officers of columns, especially at the time of the final concentration at Duala. The troops consisted almost entirely of natives commanded by Europeans, and porters were more numerous than soldiers. It is noted that wounds on arrival at the base were usually infected by a variety of organisms, especially by the *Bacillus pyocyaneus*. Chronic septicaemia was the most common cause of death among the wounded. Gas gangrene was extremely rare. Anti-tetanus serum was regularly used, but there were five deaths from tetanus. *Beriberi* raged in the French contingent of the column operating in the maritime zone, exclusively among the natives. It was characterised by difficulty in walking, slight oedema of the lower limbs and cardiac symptoms. Deaths were rare, but most of the patients were evacuated. White Asiatic rice, completely decorticated, was the basis of the diet, but this was the case also in the English contingent, which had only an insignificant number of cases, about 20 against 400 amongst the French. The porters, less well fed, clothed, and housed than the tirailleurs suffered much less than they did. Two sections of a company fed in common, but had different cantonments; only one was attacked. [It is to be hoped that more details will be published of this outbreak.]

Malaria is prevalent all over Cameroon. Natives had rarely to be admitted to hospital, but Europeans suffered considerably; the mortality was almost nil, but many had to be invalided. Malignant tertian parasites were found in 80 per cent. of cases, benign tertian and quartan in 10 per cent. each. Quinine was taken as a prophylactic, 0·25 gm. per day. *Blackwater fever* appeared amongst the Europeans and contributed considerably to their mortality. *Dysentery*, like malaria, raged, but amongst natives as well as Europeans; amongst the British contingent it caused 700 admissions to hospital; it killed a considerable number of native soldiers and porters. In the great majority of cases it was amoebic, but in a few instances it was shown to be bacillary. According to the Germans bacillary dysentery is to amoebic in Cameroon as 3 to 7. Amoebic dysentery was treated with considerable success by injections of emetine. A small number of cases of *typhoid* fever were proved bacteriologically, both in Europeans and natives; typhoid fever had already been reported by the Germans, especially on the plantations. There was a large amount of pneumonia and pneumoccic meningitis amongst the natives.

Trypanosomiasis showed itself in a small number of Europeans and natives, the symptoms being usually enlargement of the cervical glands, trypanides,* fever and deep pain on pressure of the soft parts; several of the areas of operation were dangerous foci of sleeping sickness. Phagedenic ulcer was a veritable plague and many natives had to be invalided. A few Europeans and natives showed *Filaria loa*. Abscesses due to guinea worm were common; the author states that guinea worm was previously unknown in Cameroon and the campaign will have contributed to its dissemination. Many deaths were caused amongst the porters, both British and French, by the privations and exhaustions of the campaign.

A. G. B.

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* This expression signifies skin manifestations; it is formed on the analogy of syphilide.

BERNUCCI (G.). **Della Tripolitania e dello stato sanitario del corpo d'occupazione durante l'anno 1914, con cenni sull' opera degli ambulatorî per indigeni, retti da medici militari.** [Report on the Territory of Tripoli and the Occupying Army for the Year 1914, with Notes on the Working of the Native Dispensaries managed by Army Medical Officers.]—*Giorn. Med. Milit.* 1915. June 30. Vol. 63. No. 6. pp. 425–470.

The population of the territory of Tripoli, exclusive of Fezzan, was estimated at 530,000 at the last Turkish census, which was taken in July 1911. Being obtained chiefly for fiscal purposes, this return is probably correct. Nine-tenths of this population resides in the oases of the coast and of the hilly region inland, while the remaining tenth consists of the nomad tribes of the interior. The basis of the population is a Berber stock, crossed extensively with Arab and negro, but found in a state of purity here and there. There are also colonies of pure-blooded Jews, often of a blond type.

The soil of Tripoli is generally sandy with an impervious pan of rock underneath, which holds up the water, thus permitting of the sinking of shallow wells, on which the population depends for its supply. Below this pan there is a cretaceous subsoil. Behind the coast-line there is a table-land, furrowed by water courses and sloping again to the desert towards the south. The highest point of this table-land (Mount Tigrenna) rises only 800 metres above sea-level. The climate of the country is Mediterranean in type, the annual mean temperature for the city of Tripoli being 19·7° C., which is only 2° above the mean for Syracuse in Sicily. The lowest mean, in the month of January, is 12°, while the highest is 26·4° in August. The mean daily range of temperature is 7°. The mean annual rainfall for 20 years, for the city of Tripoli was 420 mm. (16 inches), of which 359 mm. fell between October and February, and 69 between February and October. Naturally the climate is drier than this towards the desert. At Ghadames and other places within the desert zone temperatures up to 50° in the shade have been met with. The humidity is relatively high throughout the year, the mean at Tripoli being 66, which, combined with the high temperature of the summer months, renders the climate trying to Europeans. The precipitation is nowhere great enough to form permanent rivers. One stream alone (the fountain of Sciar-Sciara) flows continuously from the edge of the table-land, but it soon loses itself in the sand, to re-appear again at the surface near the coast. One of the first cares of the new Government has been to sink wells in sufficient numbers everywhere, the water being raised to the surface by gas-engines and wind-mills. In two places only has an artesian supply been obtained, at a depth of 80 metres at one spot and at 240 at another. As might be expected, the water is generally strongly saline from chlorides, sulphates and nitrates, as in Tunisia.

From the foregoing sketch it will be seen that the territory of Tripoli is, on the whole, not unhealthy, and, in Roman times, Northern Africa was generally regarded as a healthy region. The rare occurrence of stagnant surface-water, and the consequent absence of mosquitoes in particular, renders it relatively free from malaria.

With the exception of the city of Tripoli and its suburbs, the sanitary service of the colony is at present entirely controlled by the military

authorities, and one of the first things undertaken in this connection was the establishment of a system of dispensaries for natives throughout the territory. At present the number of these medical posts amounts to 21.

The army of occupation in Tripoli had, in 1914, a mean strength of 19,130 Italian troops, who are chiefly distributed in garrisons along the coast, and 8,000 natives, including the gendarmery. The number of Italian soldiers who entered hospital in the year 1914 amounted to 7,972, of which number 4,384 cases were of an ordinary medical type. For the native troops and auxiliaries less reliable statistics alone are forthcoming. The following table gives the number of cases of zymotic disease occurring among the troops.

	Cases.
Malaria	158
Enteric fever	65
Bubonic plague	2
Leprosy (a native)	1
Entero-colitis	65
Undulant fever	2
Venereal diseases (Italians)	1,173
,, ,, (natives)	196
Tropical sore (all natives)	359

There were also 354 cases of cutaneous disease among the Italian troops and 24 cases of scurvy in natives. The mortality for the 19,130 Italian troops, during the year, amounted to only 39 = 2 per 1,000, a surprisingly low figure.

The number of attendances at the 21 native dispensaries, during the year, amounted to 156,697, comprising 38,228 cases of ordinary medical disease, 21,563 cases of syphilis, and about 10,000 cases of skin disease. In general the types of disease prevailing among the natives are those of the rest of the North of Africa and require no comment.

J. B. N.

TESTI (F.). **Il servizio sanitario militare e le condizioni igienico-sanitarie in Cirenaica dal giugno 1912 ai primi mesi del 1916.** [The Military Sanitary Service and the Sanitary Conditions in Tripoli from June 1912 to the first months of 1916.]—*Giorn. Med. Milit.* 1916. Oct. 31. Vol. 64. No. 10. pp. 737–771.

A report on the sanitary conditions of the new Italian colony of Tripoli for the period 1912–1915. The style of the report is diffuse, and the statistics are not properly tabulated, and in addition most of the information given has been already published in other forms [see, for example, BERNUCCI's report for 1914, summarized above]. The number of sanitary stations, or dispensaries, instituted for the treatment of the natives and directed by the military medical staff, was in 1916 reduced to 18. The principal diseases coming for treatment to these posts are trachoma and other chronic diseases of the eye, syphilis, tuberculosis, intestinal complaints, ankylostomiasis and chronic sores. Malaria is practically unknown, from the dryness of the climate and the absence of surface water. An outbreak of plague developed at Bengazi in the second half of the year 1913 and was not

completely suppressed until the middle of 1915. It would appear from the author's account that the disease was imported from the interior, and kept up by continual arrivals from the same quarter. He observes that the local conditions are against the spread of the disease to any great extent by rats.

J. B. N.

GABBI (Umberto). **Sulla maggiore diffusione geografica di talune malattie esotiche esistenti in Italia e sulla presenza di due nuove di esse: la filariosi e la bilharziosi.** [The Increasing Extension of Certain Tropical Diseases in Italy, and the Presence of Two New Ones, Filariasis and Bilharziasis.]—*Pathologica.* 1916. Oct. 15. Vol. 8. No. 190. pp. 323–325.

A short note reporting a still wider distribution in Italy during the last two years of undulant fever, pappataci fever, leishmaniasis, both visceral and cutaneous, and climatic bubo. To this list must now be added the previously unnoted occurrence of filariasis, both as chyluria and as elephantiasis, and of bilharziasis.

[The separate papers by different observers recording these occurrences have already been noted in the *Bulletin.*]

J. B. N.

UNITED STATES NAVAL MEDICAL BULLETIN. 1916. Oct. Vol. 10. No. 4. pp. 725–766.—**Topographical Extracts from Annual Sanitary Reports.**

Monrovia, Liberia; Freetown, Sierra Leone. [IRVINE (W. L.).] pp. 725–736. With 1 chart.

The Mosquito Coast and the Caymans. [HARGRAVE (W. W.).] pp. 737–741.

La Romano, Santo Domingo; St. Marc and Gonaives, Haiti. [HELM (J. B.).] pp. 741–748.

Tampico and Vera Cruz. [YOUNIE (A. E.).] pp. 751–753.

Progreso, Carmen and Merida, Mexico. [RIORDAN (J. F.).] pp. 754–757.

These extracts, from Reports by Assistant Surgeons of the U.S. Navy, contain much that is of interest about ports situated in little known parts of the world, in addition to well-known ports such as Freetown. The authors appear to have made the best use of their opportunities of getting information but naturally some of it lacks precision. The extracts start with an account of the geographical features of the port in question and go on to consider the climate, medical topography, water supply, drainage and sewerage, food supply, hospitals, health regulations, health conditions, with the diseases prevalent, and disease carriers. Naturally there is little information about some of the ports, where conditions are very primitive. Only a few points of interest can be mentioned here.

Monrovia seems to be untouched by sanitation. Of the population we are told that "it is variously estimated at from 6,000 to 10,000." All water is contaminated, there is no sewerage, no hospital, no definite health laws or regulations. The prevailing diseases are given as

malaria and gonorrhoea. The account of Freetown is the most complete and forms a useful compendium of information from the sanitary side. It is stated that *Musca domestica* is practically never seen for the reason that there is no horse manure. [This may be so but the reason is unsatisfactory, for the house fly, or a variety of it, breeds in night soil in India [see, *e.g.*, this *Bulletin*, Vol. 7, p. 399], and even in temperate regions does not restrict itself to horse manure.]

The Grand Cayman Island and its neighbours seem to have the characters, for the tropics, of health resorts. "The islands are exceedingly healthy, as evidenced by the great ages to which some of the inhabitants live."

Before the ship left New Orleans it was fumigated by the Public Health Service, each compartment being subjected to carbon monoxide gas for 35 minutes. Several days after, when at sea, a few rats were seen aboard. It is noted, in explanation, that the engine and boiler room were not fumigated, and that some rats escaped asphyxiation by hiding in bilges or "between the side plates and sheathing."

On the survey grounds off the Mosquito Coast [from the Misskito Indians which inhabit it] "urticaria, tinea cruris, dermatitis resulting from sand-fly bites and staphylococcic infections are very common." Local abscesses appear at some site of friction or irritation, most commonly on the hands or feet. The men were required to wear foot gear at all times during the day and an antiseptic dressing was applied "to all skin injuries regardless of extent." Instances are given to show that cases of respiratory disease pursue a very protracted and insidious course in this climate.

The town of La Romana in Santo Domingo is in cleanliness "much above the average tropical town," but St. Marc and Gonaives in the Haiti portion of the same island seem as filthy as they well can be. In the last named town there is a "very pernicious form of malaria" after the rains; it possesses a piped water supply but there are also wells and cisterns. The state of the market place, slaughterhouse, and jail must be read to be believed. At the ports in Honduras and Guatemala conditions have been improved a little by the medical department of the United Fruit Company.

The following interesting extract comes from the Tampico report:—

"The *Sacramento* was anchored in the Panuco River off Tampico from December 20th, 1914, to June 23rd, 1915. During this time no regular liberty was allowed owing to unsettled conditions and open hostility shown by the natives. Sanitary conditions in towns were not good. Mosquitoes, both anophelines and culicines, were very numerous and voracious. Quinin in doses of 5 grains was given daily as a prophylaxis, and the ship was thoroughly screened, with the happy result that not a single case of malaria occurred on board during our entire stay of over six months, with the exception of the medical officer, who developed a beautiful case of malignant tertian fever which refused to respond to quinin by the mouth, but cleared under injections of the bimurate. The medical officer was probably the only one who neglected the prophylaxis. During this time malaria of all types was extremely prevalent in Tampico, and on merchant ships and interned ships anchored close by numerous deaths occurred. This experience convinces me of the value of quinin prophylaxis, if given at quarters where the men cannot evade actually taking it regularly, as an adjunct to mosquito protection and mosquito extermination. After leaving Mexican waters quinin was discontinued, and but one case of fever developed, which was easily controlled by quinin. No deleterious effect from the long-continued medication were observed."

The most prevalent diseases in Southern Haiti are stated to be malaria, dengue, and enteritis. Small parties were allowed ashore at three ports. Very little sickness occurred on the ship with the exception of several stubborn cases of climatic bubo. Towards the end of the cruise boils in large numbers appeared. "Both of the above conditions would appear to be due to insufficient fresh vegetables and fruits, together with too long a stay in tropical waters."

A. G. B.

da Matta (Alfredo A.). **Geographia e Topographia Medica de Manáos.** [The Geography and Medical Topography of Manaos (Brazil].—92 pp. With 14 plans. 1916. Manáos: Typ. da Livraria Renaud.

This is a monograph, prepared by the author in his capacity as Head of the Municipal Medical Service, on the physical conditions and public health of the important town of Manaos, on the Upper Amazon. Part I. describes the geographical situation of Manaos, its water supply and the fauna and flora of the region, Part II. the climatology, and Part III. the demography. Part IV. deals with the prophylaxis of malaria, leprosy and tuberculosis, while the appendix contains numerous tables and plans.

A very complete account of the sanitary condition of Manaos has been given by H. Wolferstan Thomas in Vol. 4 of the *Annals of Tropical Medicine and Parasitology* (Liverpool, 1911), and the present monograph brings the statistical information down to the year 1914. From a table in the Appendix (12A) it would appear that the population of Manaos has increased from 36,000 in 1907 to 60,700 in 1914, and the task of overtaking the sanitary difficulties incidental to this rapid increase of population must have been very great. Nevertheless, much would seem to have been done, because the general mortality has fallen from 46 per 1,000 per annum in 1911 to 21·4 per 1,000 in 1914. Infectious diseases (Nos. 1 to 20 in the causes of death in table No. 12) furnished 43·6 per cent. of the total deaths in 1914, or 569 out of 1,305. Malarial fever heads the list and is followed by tuberculosis. Yellow fever, formerly somewhat prevalent, disappeared altogether in 1914. The position of Manaos, however, as a terminus of navigation for vessels proceeding up the Amazon, affords no guarantee against the re-appearance of this evil. Not only are fresh cases of yellow fever imported, but also fresh supplies of mosquitoes, and the low-lying position of the town, on an alluvial soil in the midst of creeks, renders the total extermination of mosquitoes very difficult. Table No. 14 in the appendix exhibits effectively the terrible toll taken by death from pulmonary tuberculosis, 130 deaths occurring in 1914 out of a total mortality of 1,305, or 10 per cent. of the whole. Part of this mortality is due to the landing of sick sailors from ocean-going ships, but the bad architecture of the Portuguese houses, and the abuse of alcohol are also incriminated as causes.

The financial crisis in Brazil has considerably limited the amount of money available for the improvement of Manaos.

J. B. N.

CHAMBERLAIN (Weston P.). **Care of Troops on the Mexican Border. Four Months' Medical Experience with an Army of One Hundred and Fifty Thousand Men.**—*Jl. Amer. Med. Assoc.* 1916. Nov. 25. Vol. 67. No. 22. pp. 1573–1582. With 10 text-figs.

Between May 10th and July 31st, 1916, 110,000 U.S. militia men encamped on the long Mexican frontier line between Brownsville near the mouth of the Rio Grande and Yuma seventeen degrees to the north-west. There were present also about 40,000 regulars. An account is given of the mobilisation of the militia and the defects thus disclosed. Numbers of men had to be discharged for disability; sanitary equipment was inadequate or antiquated; inoculation for typhoid and small-pox had to be rushed. The hospital preparations, etc., are described and various other topics relating to the sanitary care of a large army between 26° and 32° north latitude. A short account is given of the treatment of water-supplies, garbage, and human excreta, and of the combating of flies. There was a remarkable absence of infectious diseases and of deaths from disease, and comparison is made with the statistics in 1898, the last general call on the state troops. Only 121 deaths occurred between June and September; of these 61 were due to disease, of which only 17 were caused by acute infectious diseases. Tables illustrate this and other points. The morbidity was always well below 2 per cent. Between May and October there were 24 cases of typhoid and no deaths; in 1898 among a smaller number of troops the cases were 20,916 and the deaths 2,192 in about eight months.

"The phenomenal improvement which has characterised the present mobilization . . . may be attributed in part to betterment of general sanitary conditions, but much more largely to a specific measure, namely, the compulsory administration of antityphoid vaccine. This is evidenced by the fact that, although typhoid is endemic in this section, there have been but twenty-four cases of this disease among the troops, while there have been very much greater numbers of paratyphoid and dysentery infections, both of which are preventable by the same general sanitary precautions which are efficacious in limiting the spread of typhoid. It is the specific sanitary procedure, anti-typhoid inoculation, which has safeguarded the troops from the ravages of typhoid fever."

A table shows the "antityphoid vaccination status" of those attacked. Between May and October there were 250 cases of paratyphoid diagnosed by blood culture, and doubtless many more occurred. In general they were very mild. All but one were caused by the A bacillus. Most of the cases occurred in the lower Rio Grande valley. Antiparatyphoid inoculation has been begun. There were sporadic cases of dysentery with nine deaths. Both bacillary and amoebic forms occurred in the expeditionary force in Mexico. The weekly report of sick, July–October, shows the cases of malaria, the maximum in one week being 130.

The paper, which is illustrated by views of hospitals, hospital trains, ambulances, etc., is chiefly of military interest.

A. G. B.

MAXWELL (James L.). **The Diseases of China.**—*Jl. Trop. Med. & Hyg.* 1916. Oct. 16. Vol. 19. No. 20. pp. 237–238.

Tuberculosis in all its forms is stated to be rife in China, phthisis being probably the commonest cause of death in the cities of the South.

Syphilis is extremely prevalent and probably more severe than in England; bone affections are certainly more common. Parasyphilitic affections of the nervous system are, however, very rare.

"*Tropical Forms of Disease.*"

Epidemic Infections—Plague is endemic through the southern third of China; the prevalent type is bubonic. "The association of rats with the disease has been so evident that the scourge is known among the Chinese as the rat-plague." *Dengue* periodically invades the South and during the hot months reaches the North. It is of ordinary text-book type. *Undulant fever* is present throughout the southern two-thirds of China. *Enteric fever*, typhoid and paratyphoid, is present everywhere and is often undiagnosed. *Typhus fever* is confined to northern and central China. *Cholera* is extremely widespread, occurring as virulent epidemics.

Endemic Diseases—Leprosy is found throughout China. It is terribly rife in the south, "in places sometimes rising to ½ to 1 per cent. of the population." *Beriberi* is found along the coast and the course of the great rivers.

Protozoal Diseases.—Malaria is ubiquitous and of all varieties. Sub-tertian is endemic in the south. *Blackwater fever* has never been proved to exist in China. [This is interesting because CASTELLANI and CHALMERS include China in their list of blackwater fever localities.] *Kala azar* has of recent years been reported with increasing frequency. COCHRAN has mapped its distribution [see this *Bulletin*, Vol. 3, p. 130 and map]. It is found from Wuchang to Pekin. Children are commonly attacked. *Relapsing fever* is probably widely distributed. *Phlebotomus fever* has been reported from Hong Kong, Pekin and the Yangtse. *Yaws* is imported from time to time from the Straits, but soon dies out.

Metazoal Parasites.—Paragonimus westermani "is only reported from China as single and rare cases." There is an infected locality near Foochow. *Filaria bancrofti* has a wide but irregular distribution along the coasts of South and Central China and the valley of the Yangtse. *Schistosoma japonicum* is extremely present in the valleys of the Yangtse and its tributaries. *Ascaris lumbricoides*, *Tricocephalus trichiuris* and *Oxyuris vermicularis* are universal. *Strongyloides intestinalis* is widely distributed, but comparatively rare. *Ankylostoma duodenale* and *Necator americanus* "are ubiquitous and the cause of untold invalidism in China." North Chekiang [a maritime province] is the one great endemic centre for *Fasciolopsis buski*. Apart from this the worm has a wide distribution. The writer has found three specimens in the examination of several thousand stools for ankylostome worms. Where it produces disease the symptoms are, diarrhoea ending in dysentery, wasting, anaemia and extreme debility. *Clonorchis sinensis* is common in Canton Province and Hong Kong and in the Yangtse valley. Tape-worm is rare in China.

"*Systemic Disease.*"

Dysentery is common all over China. "Roughly speaking, amoebic dysentery is the disease of North and Central China, while amoebic,

bacillary and mixed dysenteries are common in the South." The Chinese are almost, if not quite, exempt from *sprue*. Foreigners get it in the coast ports. *Non-malignant stricture of the rectum* is common, the usual cause being tertiary syphilis. *Tropical abscess of the liver* is more common among the Chinese than among the native populations of other countries. *Tropical febrile splenomegaly* is "beginning to emerge from the maze of malarial and other splenomegalies. It is the disease in South China which at the moment calls most loudly for systematic investigation. . . . Of its etiology we are in total ignorance." *Ulcus tropicum* is relatively common in South and Central China. *Parasitic ringworms* are ubiquitous.

A. G. B.

HETFIELD (W.). **The Upper Yangtze River; Sanitary Notes from U.S.S. "Monocacy."**—*U. S. Nav. Med. Bull.* 1916. Oct. Vol. 10. No. 4 pp. 757–759.

The author, Assistant-Surgeon, U.S. Navy, gives a short account of Chungking, the ship's base, and of the diseases met with there and among the personnel, 45, of the gunboat [*cf.* this *Bulletin*, Vol. 7, p. 318]. Chungking is infested with dogs which devour all faecal matter not used for fertilizing purposes. The extent to which the natives are infected with animal parasites, chiefly ascaris and ankylostomes, is "simply appalling." Both amoebic and bacillary dysentery are very common and typhoid is present at all seasons. The water supply is taken direct from the river in buckets. Tuberculosis is "fearfully prevalent" owing to the damp climate, want of sunshine and indiscriminate expectoration. Venereal diseases abound. The natives get syphilis mildly, and tabes and general paresis are practically never seen. Small-pox, usually mild, is very common. Typhus and relapsing fever are occasionally met with.

On the ship there was a fatal case of typhus, and in February an epidemic of a slight febrile dengue-like malady lasting 2–3 days, to which the whole ship's company succumbed; recovery was prompt and there were no recurrences. There was no vermin on the ship and it was too early for biting flies or mosquitoes.

A. G. B.

ALDEN (A. Maxwell). **The Results of Fifty Autopsies on Children under Ten Years of Age.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1915. Apr.-Dec. Vol. 8. Pts. 1 & 2. pp.116–119.

The author, who is pathologist to the Santo Tomas Hospital, says that these statistics are preliminary to a larger series. The principal causes of death were: entero-colitis and gastro-enteric intoxication, 16; broncho-pneumonia, 13; ulcerative colitis, 4; tuberculosis, 9; other diseases, 1 or 2 each. Thus the gastro-enteric conditions account for 20, or 40 per cent., broncho-pneumonia for 26 per cent., and tuberculosis 18 per cent. In the more severe types of entero-colitis, where there is a chronic disturbance of metabolism, the liver almost invariably showed a marked increase in fat content. Thirteen of the children were less than two years old, the real cause being some error in diet. An education campaign amongst the mothers will alone save these children.

The broncho-pneumonia is as a rule secondary to bronchitis, measles, colds, etc., and is usually lethal. The tuberculosis figures are compared with those of institutions in New York, with the result that the percentage in this series is considerably higher. Of 13 children with tuberculosis, 10, or 76 per cent. were less than three years of age. At least one lung and the peribronchial lymph glands were found to be tuberculous in every case, pointing to the respiratory tract as the avenue of entrance. In six lung cases there were cavities, indicating "either a very virulent organism or a fertile soil." Tuberculous broncho-pneumonia is the most frequent and characteristic form; the pleura is almost always affected. We are not told to what race the children belonged.

A. G. B.

CASTELLANI (Aldo). **The Treatment of Certain Diseases of Protozoal Origin by Tartar Emetic, Alone and in Combination.**—*Brit. Med. Jl.* 1916. Oct. 21. pp. 552–553.

The diseases of protozoal origin referred to in the title are, yaws, kala azar and oriental sore, and relapsing fever. In *yaws*, in the author's experience, tartar emetic gives better results when combined with other drugs, especially potassium iodide. He therefore devised his "yaws mixture," containing tartar emetic, salicylate of soda, pot, iod. and sod. bicarb. The sodium salicylate "seems to hasten the disappearance of the thick yellow crusts." The sod. bicarb. decreases the emetic properties of the mixture. At the same time it makes it cloudy but, through the intervention of the Editor of the *British Medical Journal*, successful attempts have been made to obviate this. The result is the modified formula given below—

Tartar emetic	gr. j.
Sod. bicarb.	gr. xv.
Sod. salicyl.	gr. x.
Potass. iodid.	ʒ j.
Glycerine	ʒ ij.
Or syrup	ʒ j.
Or sod. tartarat.	gr. x.
Aquae. .. .. ad	℥ j.

Castellani thinks that glycerine gives the clearest mixture. It is given diluted in water three times daily; half doses to Europeans.

The author has recently treated four cases of infantile *kala azar* in Corfu. Three cases recovered. They were treated by tartar emetic in intravenous injections (1 per cent. tartar emetic in sterilised normal saline), in intramuscular injections, by the mouth, and by combinations of these methods. The intramuscular method is very convenient in children. To avoid the pain carbolic acid is added according to the following formula:—

"Tartar emetic	gr. viij.
Ac. carbol.	♏ x.
Glycerin	ʒ iij.
Aq. dest. .. .. ad	℥ j.

Half to 1 ccm. every other day in the gluteal regions by intramuscular injection."

The addition of gr. ½ sod. bicarb. makes the mixture slightly alakline. Martindale's antimonium oxide preparation is considered less good.

The formula for oral administration is as follows :—

Tartar emetic		gr. v.
Sod. bicarb.		gr. xxx.
Glycerin		℥ j.
Aq. chlorof.		℥ j.
Aquae	ad	℥ iij.

(ʒj to ʒij in water t.d.).

In adults the dose can be doubled.

A case of *oriental sore* was rapidly cured by twelve intramuscular injections and the tartar emetic mixture.

Tartar emetic has been used in 17 cases of *relapsing fever* in Macedonia and Corfu, but in this disease it is less effective than salvarsan ; in a large percentage of cases it appears to prevent relapses. Intravenous injections give the best result.

The conclusion is that tartar emetic can be considered a specific in espundia, granuloma inguinale, and leishmaniasis, that it is efficacious in yaws and seems to have a beneficial action also in relapsing fever.

A. G. B.

Low (George C.). **The History of the Use of Intravenous Injections of Tartar Emetic (Antimonium tartaratum) in Tropical Medicine.**—*Trans. Soc. Trop. Med. & Hyg.* 1916. Dec. Vol. 10. No. 2. pp. 37–42.

A brief chronological account of the use of intravenous injections of tartar emetic in trypanosomiasis, leishmaniasis and ulcerating granuloma. [If, as seems fitting, the credit for the discovery of a new use of a well-known drug should go to those who first put it to that use rather than those who threw out the suggestion, credit here is due to PLIMMER and THOMSON rather than to NICOLLE and MESNIL.] The author refers to the case of ulcerating granuloma published by Dr. NEWHAM and himself [this *Bulletin*, Vol. 9, p. 209] and says that he now has a similar case, in which large numbers of injections of antimony have failed to bring about cure. He suggests the use of intravenous antimony in other diseases, especially those due to protozoa, such as malaria [since which a paper by ROGERS has been published claiming that it leads to the disappearance of crescents]. Twenty-nine references are given.

A. G. B.

UPENDRA NATH BRAHMACHARI. **The Preparation of Stable Colloidal Antimony.** [Correspondence].—*Lancet.* 1916. Oct. 21. p. 728. STROUD (Lewis).—*Ibid.* Oct. 28. p. 768.

Dr. Upendra Nath Brahmachari writes to say that, a stable solution of colloidal antimony for use in protozoal diseases being hard to obtain, he has made experiments first with ethyl alcohol and then with chloroform.

"The apparatus consists of a fair-sized induction coil worked by an 8-volt accumulator. The electrodes, made of aluminium foil, are dipped in chloroform, into which are added coarse particles of metallic antimony freed from dust of antimony by sifting. On passing sparks through this medium some of the antimony passes into a powdery state and some goes into solution. On distilling off the solvent we obtain a tar-like substance, having a peculiar smell. The substance can be dried in a desiccator or in

air and even heated gently over the Bunsen burner, but apparently does not undergo much change, as it is freely soluble in chloroform after such treatment. . . . The colloid obtained in this way seems to be a very stable substance."

It is this preparation which he uses in kala azar [see this *Bulletin*, Vol. 8, p. 406].

Mr. Stroud, writing from the Crookes Laboratories, refers to the preparation of colloidal antimony, collosol antimony, made by Mr. Henry CROOKES in 1912, which is still quite stable. It is chemically prepared, and does not break down in the presence of electrolytes.

A. G. B.

MÀRTIRI (Adolfo). **L'Istituto Antirabico di Firenze "Pietro Grocco" nel quadriennio 1912–1915.** [Report for the Four Years 1912–1915 of the Pietro Grocco Antirabies Laboratory at Florence.]—*Riv. Crit. Clin. Med.* 1916. Nov. 25. Vol. 17. No. 48. pp. 613–625.

A report for the above laboratory mainly of local interest. The number of cases of suspected rabies treated amounted to 1,231, out of which number there were six deaths. The presence of rabies in the animal causing the lesion was verified by laboratory methods in 565 cases, by clinical observation in 50, and was not verified in 616. The bites were caused by 1,109 dogs, 97 cats, 1 ferret, 1 ass and 23 pigs.

J. B. N.

de LANGEN (C. D) & SCHUT (H.). **De Bloedsuiker in de Tropen en haar beteekeniss bij het acclimatiseeren.** [Blood-Sugar in the Tropics and its Relation to Acclimatization.] (With Summary in English).—*Geneesk. Tijdschr.. v. Nederl-Indië.* 1916. Vol. 56. No. 4. pp. 490–515.

By means of BANG'S method of estimating sugar in blood, the authors find that, in the tropics, the amount of grape-sugar and other copper-reducing substances in the blood is from 30 to 70 per cent. higher than in temperate climates, both in men and animals. They give the following figures :—

Amount of sugar in 100 mgm. of blood.

	Europe.	Batavia.
Rabbits	0·10 mgm.	0·16 mgm.
Guinea-pigs	0·11 ,,	0·155 ,,
Sheep	0·07 ,,	0·11 ,,
Cocks	0·15 ,,	0·26 ,,
Ricebirds	——	0·31 ,,
Men (white)	0·07 to 0·11 mgm.	0·125 to 0·20 mgm.
Javanese (healthy) ..	——	0·12 to 0·21 ,,
,, (sick)	——	0·12 to 0·19 ,,
(In a case of diabetes, plus tuberculosis and lues, 0·7 mgm.)		
Chinese (sick)	——	0·13 to 0·20 ,,
(In a case of diabetes 0·315 mgm.).		

It is to be noted that this excess of sugar does not give rise to glycosuria in inhabitants of the tropics, except in the case of excessive

amounts (0·3–0·7 mgm.), thus indicating a decreased permeability of the epithelium of the kidney, and it is suggested that the symptoms of debility experienced by Europeans in the process of getting accustomed to a tropical life are, in part at least, ascribable to this retention of sugar. The liability of inhabitants of the tropics to such diseases as accompany diabetes, as for example tuberculosis, may thus also find an explanation. A defective diet, which in temperate climates would not be sufficiently deficient in vitamines to cause beriberi, might also in this way, in the tropics, induce that disease.

By Bang's method, a weighed piece of filter-paper, from 1·5 to 2 centimetres square, is saturated with blood from a prick of the finger, and is then weighed again and dried; or a measured quantity of blood may be drawn up by a pipette and blown out upon the paper so as to obviate the process of weighing. The dried paper is next placed in a test-tube, and 7 cc. of a boiling 20 per cent. solution of potassium chloride in water is poured upon it. This coagulates the blood perfectly, whilst extracting all the sugar, and after standing for from 20 to 30 minutes the solution is poured off; the paper is then again extracted with a further 4 cc. of the same solution in order to dissolve the last traces. The sugar is estimated in the mixed solutions with Bang's solution of copper, or in other ways.

J. B. N.

de Langen (C. D.). **Cholesterine-stofwisseling en rassenpathologie.** [With Abstract in French pp. 35–36]. [The Metabolism of Cholesterin in Race Pathology.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1916. Vol. 56. No. 1. pp. 1–34.

The author summarises his paper in French, from which the following account is taken. He discusses the part played by cholesterin in the human economy, with special regard to the suprarenals, believing that by such researches the problem of biliary lithiasis can be solved. In the last ten years the native population of the Dutch East Indies have suffered from cholelithiasis rarely, though typhoid fever is very common. The author finds that the normal value of cholesterin in Malayan blood is about half the average met with in Europe by Chauffard and others; similar low values were obtained for the bile. The calculi are found chiefly in the large and small bile ducts, rarely in the gall bladder; those which have been examined are formed of bilirubin-calcium, not of cholesterin. In Japan biliary calculi are also rare, and of the same composition as the Malayan. The author wonders whether the slight cholesterin metabolism is due to a diet poor in cholesterin or whether the internal glands function differently according to the race. He notes that in diabetes and other diseases in Europe—rare in the Dutch Indies—there is excess of cholesterin in the blood.

A. G. B.

Concepción (Isabelo) & Bulatao (Emilio). **Blood-Pressure Picture of the Filipinos.**—*Philippine Jl. Sci.* Sec. B. Trop. Med. 1916. May. Vol. 11. No. 3. pp. 135–149. With 2 text-figs.

The only previous observations on Filipinos were made by Musgrave and Sison and by Chamberlain. They discussed only the systolic pressure. The authors point out the importance of the diastolic and

pulse pressures. "According to WARFIELD blood-pressure estimation should register three values, namely: the height of the systolic; the height of the diastolic; and the difference between the two, the pulse pressure." The significance of each is then discussed. The readings were made on 697 males and 218 females, a total of 915 cases, convicts in Bilibid prison or persons connected with the College of Medicine and Surgery. The apparatus used was the Erlanger sphygmomanometer. A table and a chart show the averages of the readings from 15-20 and afterwards in decades. "There is a general tendency for the systolic, diastolic, and pulse pressures to ascend with age. . . . In males of 29·5 years and in females of 25·1 years our cases show average systolic pressures of 115·5 and 116 millimeters of mercury, diastolic pressures of 79·1 and 83·4 millimeters, and pulse pressures of 36·4 and 32·6 millimeters respectively." Another table compares the systolic pressure readings obtained with those given by CHAMBERLAIN (Filipinos) and WOLEY (Americans).

"The systolic pressures of the Filipinos are very much lower than those of the Americans living in temperate climates (Woley, Table II), but the same as those of the Americans living in the tropics (Chamberlain) whose ages range between 18 and 50, the average being 26·6 years. These findings suggest that in the tropics systolic pressures are very much lower than in temperate climates." . . .

"Huggard claims that this low blood pressure found in the tropics is associated with the dilation of the peripheral blood vessels as well as increased elasticity of the vessel walls. Musgrave and Sison believe that it is due, first, to the low peripheral resistance associated with the increased secretory function of the sweat glands and, secondly to the possibility of splanchnic influences associated with prevalent sensation of abdominal vacuity and to the frequency of gastrointestinal disturbances. Chamberlain suggests that there is a vaso-constriction of the superficial blood vessels in the tropics. This will not only explain the occurrence of tropical pallor, but wlll also account for the fact of its disappearance in a few days on the return of the subject to a cold region."

As to pulse rate HUGGARD and CHAMBERLAIN maintain that the pulse rate in the tropics is increased by ten beats a minute. CHAMBERLAIN found an average of 79·1. The authors' figures were 81·5 for males and 84·1 for females; they thus agree with CHAMBERLAIN. These and other results are given in the authors' summary.

A. G. B.

GAUDUCHEAU (A.). **Mélange colorant pour remplacer le Giemsa.**—*Bull. Soc. Med. Chirurg. Indo-Chine.* 1916. Sept. 10. Vol. 7. No. 8. 5 pp.

The author, writing from the bacteriological laboratory at Hanoi, describes a stain which he has devised to replace the now unobtainable Giemsa. The composition of his mixture, which is at once a stain and a fixative, is as follows:—

Absolute ethyl alcohol or alcohol at 95°	7 parts.
Water soluble eosin, 0·5% in absolute alcohol ..	1·5 ,,
Methylene blue, 1% in absolute alcohol	1·5 ,,
Borrel blue	0·5 ,,

The Borrel blue is prepared after TRIBONDEAU'S method.* The slides are placed face upwards in Petri capsules or other receptacles.

* *C. R. Soc. Biol.* 1916. Apr. p. 282.

A known quantity of the mixture is poured over, so as to cover the smears, and after 4–5 minutes four times as much water is added and carefully mixed; the preparations are then left for 25 minutes if the stain is fresh, 10 minutes if it is old (a week or more). Wash with water for ½–1 minute and dry with blotting paper. The results obtained with blood are as those with Giemsa. It may be necessary to change the relative quantities of each stain, as specimens vary in their activity; the author has used Grübler's stains. Avoid precipitation by not letting the water act too long. The stain does very well for smears from stools, showing up spirilla and spirochaetes clearly. The cost is small.

A. G. B.

TRIBONDEAU (L.). **Etalement du sang sur lames de verre porte-objets par le "procédé des ciseaux."**—*C. R. Soc. Biol.* 1916. Nov. 18. Vol. 78. No. 18. pp. 1011–1012.

The "scissors method" of making blood smears seem worth description; experience alone will show whether it is superior to other methods, as the author believes.

The blades of the scissors and the slide are first carefully cleaned with alcohol and dried. The blades are separated or opened at a right angle. Take the handle of one blade in the left hand so that the blade points forwards, its cutting edge turned to the left, the plane surface looking upwards and slightly to the right. With the right hand hold the slide by one end between the thumb and index. Touch the exuding drop of blood with the slide close to the index. Hold the slide horizontally with the drop below and rest it at its middle across the cutting edge of the blade. Then push the slide from right to left till the blade touches the drop, move it lightly from side to side till the drop spreads between the slide and blade, and then draw it slowly from left to right so as to spread the blood over the left two-thirds of the slide. Slide and blade must be always in contact and keep their respective orientation. Dry the smear in air. Clean the scissors with cold water and then alcohol. Any instrument with a straight cutting edge serves.

It is claimed that in these smears malarial parasites are not deformed.

A. G. B.